



## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

#### 50 CFR Part 17

[Docket No. FWS–R2–ES–2020–0130; FF09E21000 FXES11110900000 212]

RIN 1018-BF21

### Endangered and Threatened Wildlife and Plants; Endangered Species Status for Arizona Eryngo and Designation of Critical Habitat

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Proposed rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the Arizona eryngo (*Eryngium sparganophyllum*), a plant species native to Arizona and New Mexico in the United States, and to Sonora and Chihuahua in Mexico, as an endangered species and to designate critical habitat in Arizona under the Endangered Species Act of 1973, as amended (Act). After a review of the best available scientific and commercial information, we find that listing the species is warranted. Accordingly, we propose to list the Arizona eryngo as an endangered species under the Act. If we finalize this rule as proposed, it would add this species to the List of Endangered and Threatened Plants and extend the Act's protections to the species. We also propose to designate critical habitat for the Arizona eryngo under the Act. In total, approximately 13.0 acres (5.3 hectares) in Pima and Cochise Counties, Arizona, fall within the boundaries of the proposed critical habitat designation. We also announce the availability of a draft economic analysis (DEA) of the proposed designation of critical habitat for the Arizona eryngo.

**DATES:** We will accept comments received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES**, below) must be received by 11:59 p.m. Eastern Time on the closing date. We must receive requests for a public hearing, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by [**INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

**ADDRESSES:** You may submit comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal:

<http://www.regulations.gov>. In the Search box, enter FWS–R2–ES–2020–0130, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on “Comment Now!”

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS–R2–ES–2020–0130, U.S. Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041–3803.

We request that you send comments only by the methods described above. We will post all comments on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see **Information Requested**, below, for more information).

*Availability of supporting materials:* For the critical habitat designation, the coordinates or plot points or both from which the maps are generated are included in the administrative record and are available at <https://www.fws.gov/southwest/es/arizona/>, at <http://www.regulations.gov> under Docket No. FWS–R2–ES–2020–0130. Any additional tools or supporting information that we may develop for the critical habitat designation will also be available at the Service website set out above and may also be included in the preamble and/or at <http://www.regulations.gov>.

**FOR FURTHER INFORMATION CONTACT:** Jeff Humphrey, Arizona Ecological Services Field Office, 9828 North 31st Ave. C3, Phoenix, AZ 85051–2517; telephone 602–242–0210. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800–877–8339.

**SUPPLEMENTARY INFORMATION:**

**Executive Summary**

*Why we need to publish a rule.* Under the Act, if we determine that a species is an endangered or threatened species throughout all or a significant portion of its range, we are required to promptly publish a proposal in the *Federal Register* and make a determination on our proposal within 1 year. To the maximum extent prudent and determinable, we must designate critical habitat for any species that we determine to be an endangered or threatened species under the Act. Listing a species as an endangered or threatened species and designation of critical habitat can only be completed by issuing a rule.

*What this document does.* We propose to list the Arizona eryngo as an endangered species under the Act, and we propose the designation of critical habitat for the species.

*The basis for our action.* Under the Act, we may determine that a species is an endangered or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that the Arizona eryngo is primarily at risk of extinction due to habitat changes: physical alteration of cienegas, water loss, and changes in co-occurring vegetation, all of which are exacerbated by the effects of climate change.

Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat.

*Peer review.* In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of eight appropriate specialists regarding the species status assessment report used to inform this proposed rule. We received responses from four specialists, which informed this proposed rule. The purpose of peer review is to ensure that our listing determinations and critical habitat designations are based on scientifically sound data, assumptions, and analyses. The peer reviewers have expertise in the biology, habitat, and threats to the species.

### **Information Requested**

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned

governmental agencies, Native American tribes, the scientific community, industry, or any other interested parties concerning this proposed rule.

We particularly seek comments concerning:

(1) The species' biology, range, and population trends, including:

(a) Biological or ecological requirements of the species, including habitat requirements for nutrition, reproduction, or pollination;

(b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures for the species, its habitat, or both.

(2) Factors that may affect the continued existence of the species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors.

(3) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this species and existing regulations that may be addressing those threats.

(4) Additional information concerning the historical and current status, range, distribution, and population size of this species, including the locations of any additional populations of this species.

(5) The reasons why we should or should not designate habitat as "critical habitat" under section 4 of the Act (16 U.S.C. 1531 *et seq.*), including information to inform the following factors that the regulations identify as reasons why designation of critical habitat may be not prudent:

(a) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(b) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat

stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act;

(c) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States; or

(d) No areas meet the definition of critical habitat.

(6) Specific information on:

(a) The amount and distribution of Arizona eryngo habitat;

(b) What areas, that were occupied at the time of listing and that contain the physical or biological features essential to the conservation of the species, should be included in the designation and why;

(c) Special management considerations or protection that may be needed in critical habitat areas we are proposing, including managing for the potential effects of climate change; and

(d) What areas not occupied at the time of listing are essential for the conservation of the species. We particularly seek comments:

(i) Regarding whether occupied areas are adequate for the conservation of the species; and

(ii) Providing specific information regarding whether or not unoccupied areas would, with reasonable certainty, contribute to the conservation of the species and contain at least one physical or biological feature essential to the conservation of the species.

(7) Land use designations and current or planned activities in the subject areas and their possible impacts on proposed critical habitat.

(8) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designation, and the related benefits of including or excluding specific areas.

(9) Information on the extent to which the description of probable economic impacts in the draft economic analysis is a reasonable estimate of the likely economic impacts.

(10) Whether any specific areas we are proposing for critical habitat designation should be considered for exclusion under section 4(b)(2) of the Act, and whether the benefits of potentially excluding any specific area outweigh the benefits of including that area under section 4(b)(2) of the Act.

(11) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding, or to better accommodate public concerns and comments.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made “solely on the basis of the best scientific and commercial data available.”

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

If you submit information via <http://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the

website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <http://www.regulations.gov>.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on <http://www.regulations.gov>.

Because we will consider all comments and information we receive during the comment period, our final determinations may differ from this proposal. Based on the new information we receive (and any comments on that new information), we may conclude that the species is threatened instead of endangered, or we may conclude that the species does not warrant listing as either an endangered species or a threatened species. For critical habitat, our final designation may not include all areas proposed, may include some additional areas that meet the definition of critical habitat, and may exclude some areas if we find the benefits of exclusion outweigh the benefits of inclusion.

#### *Public Hearing*

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by the date specified in **DATES**. Such requests must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the *Federal Register* and local newspapers at least 15 days before the hearing. For the immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the *Federal Register*. The use of these virtual public hearings is consistent with our regulations at 50 CFR 424.16(c)(3).



## **Previous Federal Actions**

On April 9, 2018, we received a petition from the Center for Biological Diversity, requesting that the Arizona eryngo be listed as endangered or threatened and critical habitat be designated for this species under the Act. On April 26, 2019, we published our 90-day finding that the petition presented substantial scientific information indicating that listing the Arizona eryngo under the Act may be warranted (84 FR 17768). This document constitutes our 12-month warranted petition finding for the Arizona eryngo.

## **Supporting Documents**

A species status assessment (SSA) team prepared an SSA report for the Arizona eryngo. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species. The Service sent the SSA report to eight independent peer reviewers and received four responses. The Service also sent the SSA report to 16 partners, including scientists with expertise in wetland management and conservation and plant ecology, for review. We received review from eight partners (Federal, State, and County governments, and universities).

## **I. Proposed Listing Determination**

### **Background**

A thorough review of the taxonomy, life history, and ecology of the Arizona eryngo (*Eryngium sparganophyllum*) is presented in the SSA report (Service 2020). The Arizona eryngo is an herbaceous perennial flowering plant in the Apiaceae (carrot) family that is native to Arizona and New Mexico in the United States, and to Sonora and Chihuahua in Mexico. The species requires moist, organic alkali soils found in spring-fed cienegas (aridland wetlands) supported by adequate groundwater.

Arizona eryngo grows to a height of about 1.5 meters (m) (~5 feet (ft)) with long, linear, parallel-veined leaves that emerge from a basal rosette. The plant is conspicuous when flowering in June through September (Stromberg *et al.* 2019, p. 8; New Mexico Rare Plants 2013, p. 1). The flowers are cream-colored and clustered in dense heads. Dry fruits ripen in September and October. The species is believed to live well over 10 years, and many pollinators have been documented interacting with the species. Arizona eryngo reproduces through pollination, creating genetically unique individuals, as well as vegetatively via rhizomes (underground stems) producing clones, which are genetically identical (Stromberg *et al.* 2019, p. 8).

The Arizona eryngo only occurs in spring-fed cienega wetlands and grows best in full sun in areas with few nonnative plant species, limited woody vegetation, or other vegetation that may shade or otherwise outcompete them. The species has been found in conditions from standing water up to 2 centimeters (cm) (0.8 inches (in)) deep to soil that is dry at the surface but is moist to saturated several cm into the soil (Stromberg *et al.* 2019, pp. 6, 8). It is hypothesized that flowering is determined, in part, by soil moisture availability (i.e., plants do not flower in drier conditions when the plants are more stressed) and that ramets (clones) are produced during drier periods (Li 2019, p. 8; Stromberg *et al.* 2019, p. 8). Spatial distribution of Arizona eryngo within cienegas appears to be associated with water availability; drier conditions favor the growth of trees that outcompete the species, and very wet conditions (i.e., perennially standing water) favor the growth of bulrush (*Schoenoplectus americanus*) that similarly outcompetes Arizona eryngo (Li 2019, p. 4). Soils inhabited by Arizona eryngo are high in organic matter, saline, alkaline, and have salts on soil surfaces in the seasonally dry periphery (Stromberg *et al.* 2019, pp. 6, 14).

The Arizona eryngo is known historically from six sites: three sites in Arizona and one in New Mexico in the United States, and one site in Sonora and one site in

Chihuahua in Mexico (Sánchez Escalante *et al.* 2019, pp. 16–17; Stromberg *et al.* 2019, pp. 3–8). Given the historical distribution of functional aridland cienegas (greater than 95 percent of the historical area of cienegas is now dry (Cole and Cole 2015, p. 36)), it is likely that Arizona eryngo populations were historically more abundant, occurred closer to one another, and were more connected (through pollination) than they are currently. The species has been extirpated from one site in Arizona and one site in New Mexico but remains extant at the other four sites (two in Arizona; one in Sonora, Mexico; and one in Chihuahua, Mexico). Additionally, efforts are underway to reintroduce the species to the historical site in Arizona from which it was extirpated (Agua Caliente) and to introduce the species to a new site (Historic Canoa Ranch in Pima County, Arizona) within its general historical range. A handful of plants now exist at these reintroduction sites, but these efforts have not yet been successful at establishing viable populations. With the exception of the reintroduced plants at Agua Caliente, which is about 6 kilometers (km) (3.7 miles (mi)) from the La Cebadilla population, other populations are about 90 to 335 km (56 to 208 mi) apart from one another.

Reports of the species farther south in the Mexican states of Durango, Jalisco, Nayarit, Zacatecas, Michoacán, and Guerrero are likely not valid because the herbarium specimen from Durango, Mexico, is morphologically different from northern specimens (Stromberg *et al.* 2019, p. 7). Additionally, a report of the species occurring in Zacatecas, Nayarit, and Jalisco lacks supporting herbaria records (Stromberg *et al.* 2019, p. 7), and specimens collected from Michoacán and Guerrero appear to be a distinct taxon due to differences in flower color, habitat, elevation, and flowering time (Stromberg *et al.* 2019, p. 8). Because the species is obvious (tall with conspicuous flowers and locally abundant) and most cienegas, particularly ones still extant in Arizona and New Mexico, have been surveyed (AGFD 2019, p. 7), it is unlikely that new populations will be found. The six historical and current populations are discussed in greater detail below:

*Las Playas, New Mexico, United States (Extirpated)*—The species historically occurred at Playas or Las Playas Springs in the Playas Basin, east of the Animas Mountains in Hidalgo County, but it has not been found since 1851 and is believed to be extirpated (Sivinski 2018, p. 21; Stromberg *et al.* 2019, p. 4). The springs were diminished and Las Playas was found primarily dry by the mid to late 1950s (Sivinski 2018, p. 27; Stromberg *et al.* 2019, p. 5). The cienega at Las Playas is now considered dead (Sivinski 2018, p. 8) due to agricultural and industrial (i.e., copper mining) dewatering (Stromberg *et al.* 2019, p. 5). “Dead cienegas” are historical cienegas that no longer have groundwater at or near the ground surface and likely have water tables so severely depleted that restoration, given today’s techniques and economics, is not feasible (Sivinski 2019, p. 14).

*Agua Caliente, Arizona, United States (Extirpated)*—Arizona eryngo historically occurred at the Agua Caliente Ranch east of Tucson in Pima County, Arizona, within the Santa Cruz River Basin (Stromberg *et al.* 2019, p. 5). This population was extirpated likely due to multiple manipulations of the site, including spring modification (Stromberg *et al.*, p. 5; SWCA 2002, pp. 1–2) and pond impoundment. Two springs (a hot spring and a cold spring) were blasted with explosives in the 1930s, and again in the 1960s, to increase water flow for resort development. Instead, the blasting significantly reduced water flow (Friends of Agua Caliente 2020, entire). The flow rate from the springs has varied from as high as 500 gallons per minute historically, to an immeasurable seep in recent years (Pima County 2020, entire).

The property is now owned by Pima County Natural Resources, Parks and Recreation and is managed as a regional park (Friends of Agua Caliente 2020, entire). Restoration of one of the ponds (Pond 1) began in 2019, and was completed in 2020 (Pima County 2020, entire). This pond is maintained by pumped groundwater, but soil sealant was used to reduce seepage and conserve water. As part of the restoration, select

palm trees (*Phoenix* spp.) and invasive cattails (*Typha* spp.) were removed to encourage growth of native species, and a small wetland on the northwest side of Pond 1 was created (Pima County 2020, entire).

Experimental reintroductions of Arizona eryngo began in 2017, using plants grown in a nursery with seeds collected from La Cebadilla (Fonseca 2018, entire; Stromberg *et al.* 2019, pp. 5, 10). The initial reintroduction effort in 2017 of 20 plants had limited success due to javelina (*Tayassu tajacu*) damage, as well as placement of the plants at sites where they experienced water stress (Fonseca 2018, entire). The second effort in 2018 of 15 plants had improved success, but a number of plants were eaten by gophers (*Thomomys bottae*) (Li 2019, p. 6) or died of other causes. More recent reintroductions have resulted in the establishment of additional plants, including in the small wetland and wildlife island of Pond 1; however, efforts have not yet resulted in the establishment of a self-sustaining Arizona eryngo population.

*La Cebadilla, Arizona, United States (Extant)*—Arizona eryngo occurs in the La Cebadilla Cienega adjacent to the Tanque Verde Wash east of Tucson in Pima County, Arizona, within the Santa Cruz River basin (Stromberg *et al.* 2019, p. 5). The cienega is located on lands owned by La Cebadilla Estates and the Pima County Regional Flood Control District; the majority of plants occur on the privately owned portion of the cienega. In 2019, Arizona eryngo was documented in a number of colonies with a total spatial extent of 0.4 hectares (1.11 acres) (Li 2020a, p. 1). Some colony boundaries are defined by the presence of bulrush and tree canopy (Li 2019, p. 1).

The Arizona eryngo population at La Cebadilla is estimated to be about 30,000 aggregates—groups of clones, which are genetically identical individuals that result from vegetative reproduction (Li 2020b, p. 1). Each clone has a unique basal stem, and multiple clones can form a clustered aggregate that resembles an individual plant (Li

2020a, p. 2). While this is the largest of the four extant populations, the plants occur in a very confined space.

The homeowners association of La Cebadilla Estates manages the cienega (the portion not owned by the Pima County Regional Flood Control District) and nearby La Cebadilla Lake (also referred to as a pond, to the west of the cienega). The homeowners association has enacted covenants that prevent development of the cienega or sale to private developers (La Cebadilla Estates 2005, entire). The spring is located on the western edge of the cienega and a concrete spring box diverts some water to sustain the lake (Fonseca 2019, p. 2; Stromberg *et al.* 2019, p. 5).

*Lewis Springs, Arizona, United States (Extant)*—Arizona eryngo occurs in the Lewis Springs Cienega just to the east of the San Pedro River in Cochise County, within the San Pedro River Basin (Stromberg *et al.* 2019, p. 5). The cienega is located within the San Pedro Riparian National Conservation Area (SPRNCA) managed by the Bureau of Land Management (BLM). The San Pedro riparian area, containing about 64 km (40 mi) of the upper San Pedro River, was designated by Congress as a National Conservation Area in 1988. The primary purpose for the designation is to conserve, protect, and enhance the desert riparian ecosystem, a rare remnant of what was once an extensive network of similar riparian systems throughout the Southwest.

The Lewis Springs Complex currently has five groundwater outflows and is comprised of multiple elongated wetlands generally oriented northwest-southeast along a slope, totaling 1.2 hectares (3 acres) (Radke 2013, entire; Simms 2019, entire; Stromberg *et al.* 2019, p. 6; Li 2020a, p. 2). As of September 2019, four of the eight wetlands support Arizona eryngo (Simms 2019, entire). Within these four wetlands, Arizona eryngo occurs in six colonies with discrete boundaries, the spatial extent of which was about 0.04 hectares (0.1 acres) in 2019 (Li 2020a, p. 1). The population has had recent

estimates of over 1,000 plants (Stromberg *et al.* 2019, p. 6; Li 2020a, p. 1; Li 2020b, p. 1).

BLM has conducted some removal of the nonnative Johnsongrass (*Sorghum halepense*) at Lewis Springs and is planning for additional removal of the species. BLM is also planning experimental removal of the native upland plant baccharis (*Baccharis* spp.) at Lewis Springs, as well as establishment of additional populations and/or subpopulations of Arizona eryngo at suitable sites within Lewis Springs and the SPRNCA.

*Rancho Agua Caliente, Sonora, Mexico (Extant)*—Arizona eryngo occurs in the Agua Caliente Cienega on the privately owned Rancho Agua Caliente east of Esqueda in the municipality of Nacozari de García (Sánchez Escalante *et al.* 2019, p. 16; Stromberg *et al.* 2019, p. 7). Rancho Agua Caliente is an active cattle ranch. Based on aerial photographs, the cienega appears to be about 5 hectares (12.3 acres) (Stromberg *et al.* 2019, p. 7); however, it may only be about 1.5 hectares (3.7 acres) (Sánchez Escalante 2019, pers. comm.).

This cienega is the only known site for Arizona eryngo in Sonora. In 2018, hundreds of Arizona eryngo, including juveniles, occurred along the marsh near the spring within a nearly 1-hectare (2.5-acres) area (Sánchez Escalante *et al.* 2019, p. 16; Sánchez Escalante 2019, pers. comm.). The estimated area occupied by Arizona eryngo is larger than the other sites, while the population estimate is quite low, thus indicating the population is more sparse or patchy than La Cebadilla or Lewis Springs. Based on photography of the site, it appears that Rancho Agua Caliente currently supports areas with a range of soil moisture (from standing water to dry soils) and open sun conditions.

*Ojo Vareleño, Chihuahua, Mexico (Extant)*—Arizona eryngo occurs at a privately owned hot springs spa, El Ojo Vareleño, located northwest of the municipality of Casas Grandes in Chihuahua (Sánchez Escalante *et al.* 2019, p. 9; Stromberg *et al.* 2019, pp. 6–

7). The site is within the San Miguel River Basin at the base of the Piedras Verdes Mountains (Stromberg *et al.* 2019, p. 6). The extent of the cienega is currently about 1 hectare (2.5 acres) and supports about 56 adult plants (Sánchez Escalante *et al.* 2019, p. 17) that occupy an area of about 0.075 hectares (0.2 acres) (Sánchez Escalante 2019, pers. comm.). No juveniles were documented.

Based on photography of the site, it appears that Ojo Vareleño currently supports areas with a range of soil moisture (from standing water to dry soils) and sunlight conditions (from open sun to highly shaded). The nonnative giant reed (*Arundo donax*) invasion at the site is creating conditions with high amounts of shade and little to no space for other plants. Springflow is collected in concrete spa ponds (Sánchez Escalante *et al.* 2019, p. 28), which likely affects the natural hydrology of the site.

## **Regulatory and Analytical Framework**

### *Regulatory Framework*

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an endangered species or a threatened species. The Act defines an endangered species as a species that is “in danger of extinction throughout all or a significant portion of its range,” and a threatened species as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;



(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term “foreseeable future” extends only so far into the future as the Services can reasonably determine that both the future threats and the species’ responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species’ likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species’ biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

#### *Analytical Framework*

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent a decision by the Service on whether the species should be proposed for listing as an endangered or threatened species under the Act. It does, however, provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can

be found at Docket No. FWS–R2–ES–2020–0130 on <http://www.regulations.gov> and at <https://www.fws.gov/southwest/es/arizona/>.

To assess viability of the Arizona eryngo, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.

## Summary of Biological Status and Threats

In this discussion, we review the biological condition of the species and its resources, and the threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability.

Using various timeframes and the current and projected future resiliency, redundancy, and representation, we describe the species' levels of viability over time. For the Arizona eryngo to maintain viability, its populations or some portion thereof must be resilient. A number of factors influence the resiliency of Arizona eryngo populations, including occupied area, abundance, and recruitment. Elements of the species' habitat that determine whether Arizona eryngo populations can grow to maximize habitat occupancy influence those factors, thereby influencing the resiliency of populations. These resiliency factors and habitat elements are discussed in detail in the SSA report and summarized here.

### *Species Needs*

#### Abundance

Larger plant populations have a lower risk of extinction than smaller populations (Menges 2000, p. 78). Small populations are less resilient and more vulnerable to the effects of demographic, environmental, and genetic stochasticity and have a higher risk of extinction than larger populations (Matthies *et al.* 2004, pp. 481, 485). Small populations may experience increased inbreeding, loss of genetic variation, and ultimately a decreased potential to adapt to environmental change (Matthies *et al.* 2004, p. 481). When rare plant populations are very small (fewer than 100 individuals), they may suffer from inbreeding depression (Maschinski and Albrecht 2017, p. 392). Furthermore, fewer pollinators visit plants in small and isolated populations, which may lead to reduced pollination and lowered fecundity (Matthies *et al.* 2004, p. 482).

For populations of *Arizona eryngo* to be resilient, abundance should be high enough that local stochastic events do not eliminate all individuals, allowing the overall population to recover from any one event. A greater number of individuals in a population increases the chance that a portion of the population will survive. The necessary abundance or minimum viable population (MVP) size for *Arizona eryngo* is unknown; however, estimations can be attained from literature. For example, Pavlik (1996, p. 137) recommends MVP sizes ranging from 50 individuals to 2,500 individuals for the conservation of rare plants, depending on various life history characteristics of the taxon. Some of the *Arizona eryngo*'s life history characteristics indicate that an MVP may require higher abundance, while other characteristics indicate that lower abundances may be sufficient. For example, the species is a perennial and commonly produces ramets, which means that fewer individuals are needed to achieve an MVP. Conversely, it is an herbaceous plant, which means that an MVP may require higher abundance. The other characteristics are unknown for this species. Based on our current understanding of the species' life history, we conclude that an initial MVP in the middle of the spectrum provided by Pavlik (1996, p. 137) is appropriate. Therefore, a population size of 1,225 may be needed to achieve high resiliency for the *Arizona eryngo*.

Determinations of MVP usually take into account the effective population size, rather than total number of individuals; 10 genetically identical individuals (for example, clones or ramets) would have an effective population size of one. In the case of the *Arizona eryngo*, we have estimates of abundance of individuals for each population, but we do not know the ratio of ramets to genetically unique individuals, although evidence indicates the species is highly clonal. In cases like this, Tependino (2012, p. 946) suggests adjusting the stem counts of rare clonal species to adjust for the inflated population size from the inclusion of ramets. Therefore, to account for the clonal nature of the *Arizona eryngo*, to estimate our final MVP we added 50 percent to the estimated

MVP, which resulted in a total of about 1,840 plants needed to be a highly resilient population.

#### Recruitment

Arizona eryngo populations must also reproduce and produce sufficient amounts of seedlings and ramets such that recruitment equals or exceeds mortality. Ideally, we would know key demographic parameters of the plant (i.e., survival, life expectancy, lifespan, the ratio of ramets to genetically unique individuals) to estimate the percentage of juveniles required in a population to achieve population stability or growth. Because we currently do not know any of these parameters, we are using the presence of juveniles as an important demographic factor influencing resiliency.

Current population size and abundance reflects previous influences on the population and habitat, while reproduction and recruitment reflect population trends that may be stable, increasing, or decreasing in the future. For example, a large, dense population of Arizona eryngo that contains mostly old individuals may be able to withstand a single stochastic event over the short term, but it is not likely to remain large and dense into the future, as there are few young individuals to sustain the population over time. A population that is less dense but has many young individuals may be likely to grow denser in the future, or such a population may be lost if a single stochastic event affects many seedlings at once. Therefore, the presence of young individuals is an important indicator of population resiliency into the future.

#### Occupied Area

Highly resilient Arizona eryngo populations must occupy cienegas large enough such that stochastic events and environmental fluctuations that affect individual plants or colonies do not eliminate the entire population. Repopulation through seed dispersal and germination and ramet production within the cienega can allow the population to recover from these events.

Larger functional cienegas are likely to support larger populations of Arizona eryngo and are more likely to provide patches of suitable habitat when small stochastic events and environmental fluctuations occur. For example, during drought years, areas closer to spring seeps and possibly areas with natural depressions (i.e., topographic variation) may retain more moisture throughout the year than areas farther away from seeps and slightly higher in elevation. Conversely, during years with heavy rainfall, slightly higher elevation areas may retain moist soils that are not inundated year round, providing suitable habitat for the species.

Areas currently occupied by Arizona eryngo range from about 0.04 hectares (0.1 acre) to 0.9 hectares (2.2 acres). Based on historical and current estimates of cienega size and area occupied by Arizona eryngo, we approximate that a resilient Arizona eryngo population should occupy greater than 1 hectare (2.5 acres) within a functional cienega.

#### Soil Moisture

Resilient Arizona eryngo populations need moist to saturated soils year round. Arizona eryngo has been documented in standing water up to two centimeters to soil that is dry at the surface but saturated several centimeters into the soil (Stromberg *et al.* 2019, pp. 6, 8). It is hypothesized that flowering is determined, in part, by soil moisture availability (i.e., plants do not flower in drier conditions when the plants are more stressed) and that ramets are produced during drier periods (Li 2019, p. 8; Stromberg *et al.* 2019, p. 8). Seedling recruitment may be episodic, with greater recruitment success in wetter years. Soils must remain sufficiently moist for successful seedling recruitment, particularly in the hottest/driest time of the year (normally May/June). If soils become too dry, other more drought-tolerant species are likely to encroach and outcompete the Arizona eryngo (Simms 2019, p. 6; Li 2019, p. 1), or if it becomes very dry such that the roots are not in moist soil, the plant is likely to die. If the soil is inundated with water (such that there is standing water on the surface) for too long, other species that grow

more aggressively in mesic conditions are likely to outcompete the Arizona eryngo (Li 2020, p. 2).

#### Sunlight

Highly resilient Arizona eryngo populations require full sun. Under canopy cover, the species grows less densely, and flowering is reduced. Tall native and nonnative vegetation appears to outcompete and suppress growth of the Arizona eryngo. While these species may compete for sunlight, water, and nutrients, lack of sunlight may be a primary factor driving the absence or decreased abundance of the Arizona eryngo.

#### *Risk Factors for the Arizona Eryngo*

We reviewed the potential risk factors (i.e., threats, stressors) that could be affecting the Arizona eryngo now and in the future. In this proposed rule, we will discuss only those factors in detail that could meaningfully impact the status of the species.

Those risks that are not known to have effects on Arizona eryngo populations, such as overutilization for commercial and scientific purposes and disease, are not discussed here but are evaluated in the SSA report. The primary risk factors affecting the status of the Arizona eryngo are: (1) Physical alteration of cienegas (Factor A), (2) water loss (Factor A), and (3) changes in co-occurring vegetation (Factor A). These factors are exacerbated by the ongoing and expected effects of climate change. Direct harm or mortality due to herbivory or trampling (Factor C) may also affect individuals and the seedbank, but not at levels likely to affect species viability.

#### Physical Loss and Alteration of Cienega Habitat

Historically, cienegas were more common and larger than they are today. Greater than 95 percent of the historical area of cienegas in the southwestern United States and northwestern Mexico is now dry (Cole and Cole 2015, p. 36). Functional cienegas were much more common prior to the late 1800s, as evidenced by pollen and fire records, General Land Office survey notes, and early trapper and settler diaries (Hendrickson and



Minckley 1985, p. 131; Fonseca 1998, p. 111; Cole and Cole 2015, p. 36; Brunelle *et al.* 2018, p. 2). Estimates of cienega abundance in the International Four Corners Region of the Southwest (Arizona, Sonora, New Mexico, and Chihuahua) vary from hundreds to thousands (Cole and Cole 2015, p. 36; Sivinski 2018, entire). Of the 155 cienegas that Cole and Cole (2015, p. 36) identified in the International Four Corners Region, 87 (56 percent) are either dead or so severely compromised that there is no prospect for their restoration. In addition to the reduced abundance of cienegas in the International Four Corners Region, the remaining cienegas are greatly reduced in size, and due to many being severely incised, they are more similar to creeks than marshes (Cole and Cole 2015, p. 36).

A number of complex factors, many of which are interrelated, led to the historical loss and degradation of cienegas and continue to contribute to this loss today. The primary factors include intensive grazing of domestic livestock, the removal of beavers (*Castor canadensis*) from regional streams and rivers, and agricultural recontouring (Minckley *et al.* 2013a, p. 214; Cole and Cole 2015, p. 32). Intensive overgrazing by sheep and cattle from the late 1500s to the late 1800s led to barren soil, erosion, headcutting (erosional feature in a stream that contributes to lowering the water table of the surrounding system), and increased frequency of or intensity of destructive floods, all leading to the alteration or complete destruction (complete loss of ecological function) of cienegas (Minckley *et al.* 2013a, p. 214; Cole and Cole 2015, p. 32). Beaver dams, once numerous within the range of the Arizona eryngo, slowed water and created pools and wetlands along water courses, and enhanced groundwater recharge; however, high levels of beaver trapping in the 1800s resulted in increased erosion and channel cutting of these once complex, shallow wetlands (Gibson and Olden 2014, p. 395; Cole and Cole 2015, p. 32). Additionally, early settlers recontoured (e.g., diverted, dammed, channelized) cienegas for agricultural, mining, disease control, and other purposes; this resulted in

further channelization and concentrated flow, greatly reducing the size of cienegas and further lowering the water table (Cole and Cole 2015, p. 32; Minckley *et al.* 2013b, p. 78).

We expect that Arizona eryngo populations were more widespread and occurred at historical cienegas that have lost their ecological function due to physical alteration, such that populations were more abundant, occurred closer to one another, and were more connected (through pollination and seed dispersal) than they are currently. As a result of these lost cienegas, the four extant Arizona eryngo populations are now disjunct.

Although grazing was one cause of the loss of historical cienega habitat, grazing and trampling by livestock occur only occasionally at Arizona eryngo populations. No grazing is authorized at Lewis Springs, and we are not aware of any grazing occurring at La Cebadilla and Ojo Vareleño. Trespass livestock could enter Lewis Springs and affect habitat in the cienega; although there was no evidence of cattle in 2018 or 2019, there was evidence (i.e., scat and light trailing) of a trespass horse in the area when Service biologists visited the site in 2019. Cattle are present at Rancho Agua Caliente, Sonora, and the habitat is somewhat disturbed by cattle (Sánchez Escalante *et al.* 2019, p. 16). Livestock (e.g., livestock trailing and gathering) can trample vegetation and expose and compact soil, resulting in habitat erosion and altered hydrological function, but the effects of livestock are dependent on many factors such as the intensity, duration, and timing of grazing. In the absence of other forms of disturbance (e.g., fire), it is possible that selective, well-managed livestock grazing in the winter or spring could create habitat disturbance and open sun conditions favoring Arizona eryngo seedling establishment.

Other physical alterations that occurred in the past likely continue to affect extant populations of Arizona eryngo through changes in the natural hydrology of cienegas supporting the species. For example, a berm that has been present at La Cebadilla since at least 1941, as well as various houses and roads adjacent and near the cienega, all affect

the natural hydrology of the site. Similarly, the railroad that runs parallel to Lewis Springs likely affects the hydrology of the cienega. Unlike the historical physical alterations that severely degraded cienegas, these alterations (berm, railroad, houses, etc.) have not destroyed cienega function.

#### Water Loss

Water loss in cienegas poses a significant threat to the Arizona eryngo. Causes of water loss are complex, but the primary causes at cienegas historically or currently supporting Arizona eryngo are: (1) Groundwater pumping/withdrawal, (2) spring modification, (3) water diversion, and (4) drought. These stressors are all exacerbated by climate change. Groundwater pumping or withdrawal leads to aquifer depletion and no or reduced outflow from springheads. Modification of springheads reduces or eliminates springflow. Water diverted from springheads reduces or eliminates the amount of water supporting the cienega. Drought and warming also reduce springflow and the amount of water in cienegas. Reduction in winter rain particularly leads to reduced aquifer recharge. Climate change is expected to exacerbate drought conditions, increase surface temperatures and evapotranspiration, and reduce winter precipitation, all of which may lead to a reduction in aquifer recharge and increased cienega drying.

Water loss in cienegas reduces the quantity and quality of habitat for the Arizona eryngo. The species requires very moist to saturated soils and possibly some standing water for seed germination. As water is lost from cienegas, soils become drier, reducing habitat quality and allowing woody and/or invasive vegetation to establish, further reducing available habitat.

Water loss from cienegas caused the extirpation of the species at two of the six cienegas known to historically support the Arizona eryngo (Las Playas in New Mexico, and Agua Caliente in Arizona), and all populations continue to be exposed to water loss. The sources of water loss are discussed further below.

*Groundwater withdrawal*—The population at Las Playas was extirpated primarily due to groundwater pumping for agriculture and the Playas Smelter that caused the desiccation of the spring (Sivinski 2018, p. 27; Stromberg *et al.* 2019, p. 5).

Groundwater withdrawal is also occurring near Lewis Springs, La Cebadilla, and Agua Caliente. The use of groundwater for agriculture, industry, and urban and rural development has enabled significant human population growth in the arid Southwest. Increased groundwater withdrawal can reduce or eliminate springflow, thereby eliminating wetlands altogether (Johnson *et al.* 2016, p. 52).

The largest municipalities in the Sierra Vista subwatershed, within which Lewis Springs occurs, are Sierra Vista, Bisbee, Tombstone, and Huachuca City. Within these areas, the human population is increasing, as is development distributed in rural parts of the subwatershed (Leake *et al.* 2008, p. 1). This growing population is dependent on groundwater to meet its water consumption needs. Water outflow from the subwatershed, including water withdrawn by pumping, exceeds natural inflow to the regional aquifer within the subwatershed (Leake *et al.* 2008, p. 2). As a result, groundwater levels in parts of the subwatershed are declining, and groundwater storage is being depleted (*i.e.*, a negative water budget).

Groundwater pumping in the area of Lewis Springs, up to several kilometers away, may be affecting the regional groundwater flow to the wetlands along the San Pedro River, including Lewis Springs (Stromberg *et al.* 2019, p. 9). The continued decline of groundwater levels upgradient from perennial river reaches will eventually diminish the base flow of the San Pedro River and impact the riparian ecosystem within the SPRNCA (Leake *et al.* 2008, p. 2). This groundwater use over the past century has been so profound that the effects of pumping over the past century will eventually capture and eliminate surface flow from the river, even if all groundwater pumping were to stop

(Gungle *et al.* 2016, p. 29). Models show the area of Lewis Springs as being one of the areas of greatest groundwater loss in the basin (Leake *et al.* 2008, p. 14).

The aquifer supporting the La Cebadilla springs could be reduced from numerous private wells (including the Tanque Verde Guest Ranch) producing water from the aquifer that feeds the springs (Eastoe and Fonseca 2019, pers. comm.). It is unknown how quickly pumping a mile or two away from the springs might affect the springs themselves (Eastoe and Fonseca 2019, pers. comm.).

We do not have information on the source of water supplying the springs or about the amount of groundwater use at Rancho Agua Caliente or Ojo Vareleño, both in Mexico.

*Spring modification*—The Arizona eryngo population at Agua Caliente was extirpated due to a number of manipulations, including spring modification (i.e., the springs were blasted in the 1930s and again in the 1960s) that significantly decreased the water flow (Stromberg *et al.* 2019, p. 5; Friends of Agua Caliente 2020, entire) and pond impoundment.

*Water diversion*—The Arizona eryngo population at La Cebadilla has been exposed to water diversion for many decades; this diversion may have led to a reduction in the size of the cienega, but enough water still flows to maintain the cienega and support the largest documented population (Fonseca 2019, p. 2; Stromberg *et al.* 2019, p. 5). Pond impoundment diverts water from the cienega at Agua Caliente; this was pronounced in the 1960s during subdivision construction and has continued since.

Less is known about water loss associated with the cienegas supporting the Arizona eryngo in Mexico, but we are aware that the municipality of Casas Grandes is interested in installing a pipeline from the spring at El Ojo Vareleño to supply water to the Universidad Tecnológica de Casas Grandes. Currently at Ojo Vareleño, springflow is collected in concrete spa ponds, which likely affects the natural hydrology of the site.

*Drought and warming*—All Arizona eryngo populations are exposed to drought, as well as warming temperatures from climate change. Decreased precipitation and increased temperatures due to climate change will exacerbate declines in surface and groundwater levels, which will cause further drying of cienega habitat required by the Arizona eryngo.

Climate change has already begun, and continued greenhouse gas emissions at or above current rates will cause further warming. Climate models indicate that the transition to a more arid climate is already underway and predict that in this century the arid regions of the southwestern United States will become drier (i.e., decreased precipitation) and warmer (i.e., increased surface temperatures), and have fewer frost days, decreased snow pack, increased frequency of extreme weather events (heat waves, droughts, and floods), declines in river flow and soil moisture, and greater water demand by plants, animals, and humans (Archer and Predick 2008, p. 23; Garfin *et al.* 2013, pp. 5–6). Increasing dryness in the southwestern United States and northern Mexico is predicted to occur as early as 2021–2040 (Seager *et al.* 2007, p. 1181). Climate modeling of the southwestern United States shows consistent projections of drying, primarily due to a decrease in winter precipitation (Collins *et al.* 2013, p. 1080). For both Pima and Cochise Counties, where the La Cebadilla and Lewis Springs populations occur, the average daily maximum temperature, under both lower (i.e. RCP 4.5) and higher (i.e., RCP 8.5) emissions scenarios, will increase by mid-century (Climate Explorer 2020).

Climate change over the 21st century is projected to reduce renewable surface water and groundwater resources in most dry subtropical regions (IPCC 2014, p. 69). Over the next 100 years, groundwater recharge in the San Pedro basin is expected to decrease 17 to 30 percent, depending on the climate scenario considered (Serrat-Capdevila *et al.* 2007, p. 63), and average annual base flow will be half the base flow in 2000. As the area gets drier, the San Pedro aquifer groundwater overdraft will become

more severe as recharge declines and groundwater pumping increases (Meixner *et al.* 2016, p. 135). For the purposes of our analysis, we chose two Representative Concentration Pathways, RCP 4.5 and RCP 8.5 (IPCC 2014, p. 8) to assess future condition of the Arizona eryngo. These climate scenarios were incorporated into our future scenarios of the status of the Arizona eryngo in the SSA report.

*Summary of water loss*—In summary, water loss has caused the extirpation of two of six known populations of the Arizona eryngo and has affected the current viability of all extant populations. Both extant U.S. populations are exposed to water loss through groundwater withdrawal, and one of these (La Cebadilla) is also exposed to spring diversion. Groundwater withdrawal, particularly when exacerbated by climate change, is a primary threat to the survival of the Arizona eryngo at Lewis Springs and La Cebadilla. Less is known about water loss associated with the two populations in Mexico, but spring diversion is proposed at one site supporting the Arizona eryngo, and it is likely that the species is vulnerable to groundwater withdrawal. Drought and warming as a result of climate change affects all populations, particularly when combined with groundwater withdrawal and diversion.

#### Change in Vegetation at Cienegas

The invasion of vegetation that reduces full sun conditions poses a threat to the Arizona eryngo. Changes in vegetation at cienegas are primarily from fire suppression, introduction of nonnative plant species, decreased flood events, and changes in hydrology and climate. Prior to the arrival of European settlers, burning of cienegas by indigenous people was frequent enough to exclude most woody plants (e.g., hackberry (*Celtis* spp.), buttonbush (*Cephalanthus* spp.), cottonwood (*Populus* spp.), ash (*Fraxinus* spp.), and willow (*Salix* spp.)) and suppress bulrush from cienegas and to promote growth of native grasses (Davis *et al.* 2002, p. 1; Cole and Cole 2015, p. 32). Extant cienegas now have less diversity of annual and disturbance-adapted native understory species and an

increase in native woody, clonal, and nonnative plants (Stromberg *et al.* 2017, p. 10). As water levels in cienegas decrease, woody plants invade without regular disturbance (e.g., fires, floods) to the system (Huxman and Scott 2007, p. 1). Shifts from herbaceous wetland vegetation to more deeply rooted riparian trees have been well documented at wetlands with lowered water tables (Stromberg *et al.* 2019, p. 9). These woody plants shade out Arizona eryngo and cause water level declines in cienegas through increased evapotranspiration, particularly in the summer (Johnson *et al.* 2016, p. 83).

Invasive, nonnative plants (e.g., giant reed, Johnsongrass) are of concern because they often quickly colonize an area and aggressively compete with native species such as the Arizona eryngo for sunlight, water, and nutrients. Giant reed is a fast-growing, tall (up to 6 meters (m) (~20 feet (ft))), perennial, hydrophytic (water-loving) grass that grows in riparian areas, streams, irrigation ditches, and wetlands. It is an aggressive invader that rapidly spreads into a thick monoculture that outcompetes and shades out other vegetation (Frandsen 1997, p. 245; DiPietro 2002, p. 9). Giant reed is fire-adapted and resprouts from extensive underground rhizomes even after very hot fires that kill native vegetation (DiPietro 2002, p. 9). Additionally, it uses large amounts of water, thereby reducing the amount of water available for native vegetation (DiPietro 2002, p. 10).

Johnsongrass is a fast-growing, tall, invasive perennial grass that thrives in a variety of environments and climates (Peerzada *et al.* 2017, p. 2). It mostly grows at moist sites (e.g., irrigation canals, cultivated fields, field edges, pastures), and in Arizona, it is known as a riparian weed in the Sonoran and Chihuahuan Deserts. Johnsongrass impacts the growth of native plants; it is difficult to control and has become resistant to herbicides, particularly glyphosate (Peerzada *et al.* 2017, p. 2).

At three of four cienegas supporting the Arizona eryngo (Lewis Springs, La Cebadilla, and Ojo Vareleño), an increase in woody vegetation and nonnative plant species has been documented. This vegetation is outcompeting the Arizona eryngo for



sunlight and space, likely causing a decrease in population size and extent at these sites. At Lewis Springs, Johnsongrass is aggressively invading and appears to be suppressing Arizona eryngo, particularly in the drier areas of the wetlands (Li 2019, entire; Simms 2019, entire). Johnsongrass has been present at this site since at least 2009. In the drier areas of the wetlands, baccharis is encroaching and appears to be suppressing Arizona eryngo; no Arizona eryngo plants have been found growing in the understory of baccharis (Li 2019, entire; Simms 2019, entire). At La Cebadilla, aerial imagery indicates that mesquite (*Prosopis* spp.) is invading the cienega, and cottonwood also appears to be shading out Arizona eryngo (Fonseca 2019, entire). Arizona ash (*Fraxinus velutina*) trees are invading the cienega and shading out Arizona eryngo as well (Li 2020b, p. 3). At Ojo Vareleño, many nonnative plant species also occur, with a particularly aggressive invasion of giant reed (Sánchez Escalante *et al.* 2019, pp. 9–10).

In summary, nonnative Johnsongrass and giant reed are likely to continue to aggressively invade Lewis Springs and Ojo Vareleño. These nonnative plant species may contribute to the near-term extirpation of Arizona eryngo populations at these sites. Woody vegetation encroachment at La Cebadilla and Lewis Springs is also likely to continue, further degrading habitat conditions.

#### Direct Harm and Mortality

Livestock, such as cattle and horses, and native herbivores (both invertebrate and vertebrate) may cause harm or mortality to Arizona eryngo plants through trampling, herbivory, or uprooting. Because mature plants have large, fibrous leaves, cattle are more likely to consume young plants at an early growth stage. As discussed above, cattle are present at Rancho Agua Caliente, and trespass cattle and horses could enter Lewis Springs and trample, consume flowers, and reduce the seedbank of the Arizona eryngo. To our knowledge, no livestock are present at La Cebadilla or Ojo Vareleño. At the

Agua Caliente reintroduction site in Arizona, javelina uprooted and killed young plants, and gophers ate young reintroduced plants (Fonseca 2018, p. 1; Li 2019, p. 6).

Many invertebrates have been observed on Arizona eryngo plants at La Cebadilla and Lewis Springs (Stromberg *et al.* 2019, p. 8; Li 2019, p. 2; Simms 2019, p. 1). Some of these invertebrates may be floral herbivores, but they do not appear to be of concern for the species' viability.

In summary, while herbivory and trampling may harm individual Arizona eryngo plants and the seedbank, they are not significant threats to the species.

### Summary

Our analysis of the past, current, and future influences on the needs of the Arizona eryngo for long-term viability revealed that there are two that pose the greatest risk to future viability: water loss (groundwater withdrawal and water diversion) and invasion of nonnative and woody plant species, both of which are exacerbated by drought and warming caused by climate change. Water loss reduces the availability of moist soils, and nonnative and woody plant species outcompete Arizona eryngo for sunlight, space, and water, thereby reducing the quantity and quality of habitat.

### *Species Condition*

Here we discuss the current condition of the Arizona eryngo, taking into account the risks to those populations that are currently occurring. We consider climate change to be currently occurring and exacerbating effects of drought, warming, groundwater withdrawal, diversion, and invasion of nonnative and woody plant species. In the SSA report, for each population, we developed and assigned condition categories for three population factors and two habitat factors that are important for viability of the Arizona eryngo. The condition scores for each factor were then used to determine an overall condition of each population: high, moderate, low, or functionally extirpated. These overall conditions translate to our presumed probability of persistence of each population,

with populations in high condition having the highest presumed probability of persistence over 30 years (greater than 90 percent), populations in moderate condition having a presumed probability of persistence that falls between 60 and 90 percent, and populations in low condition having the lowest probability of persistence (between 10 and 60 percent). Functionally extirpated populations are not expected to persist over 30 years or are already extirpated.

Overall, there are four remaining populations of *Arizona eryngo*, all restricted to small cienegas in the Sonoran and Chihuahuan Deserts in Arizona and Mexico. Historically, *Arizona eryngo* populations were likely connected to one another, but today they are small and isolated due to cienega loss throughout the region. Repopulation of extirpated locations is extremely unlikely without human assistance. Two populations are currently in moderate condition and two are in low condition, and two have been extirpated.

#### La Cebadilla

La Cebadilla contains the largest population of the *Arizona eryngo*, with a population estimate of over 30,000 individuals. However, this population occurs in a very small area; the occupied area is approximately 0.04 hectares (1.1 acres), and the population depends on stable groundwater to maintain springflow into the cienega. The cienega has been altered by increased presence of trees, bank erosion, pasture grading, utility construction, and subdivision development (Fonseca 2019, p. 3). Historical images indicate that the cienega was more extensive in 1941, with fewer trees on some margins of the cienega and no forest on the southern margin of the cienega (Fonseca 2019, p. 1). Due to the encroachment of woody vegetation, this site has varied sunlight conditions, with more shade currently than in the past.

The cienega has been shrinking, indicating the aquifer is being depleted (Fonseca 2019, pers. comm.). The aquifer supporting the La Cebadilla springs supports numerous

private wells (including the Tanque Verde Guest Ranch) (Eastoe and Fonseca 2019, pers. comm.). In addition to groundwater use, aquifer depletion could also result from increased evapotranspiration of tree cover and stream channel adjustments.

La Cebadilla Estates and the Pima County Regional Flood Control District (PCFCD) are committed to the conservation of the unique ecological diversity of La Cebadilla cienega and are working to reduce woody vegetation. The homeowners association of La Cebadilla Estates manages their portion of the cienega as common property for the common use and enjoyment of its members. PCFCD manages their portion of the cienega as natural open space, which has a restrictive covenant that limits development and protects natural resources on the property.

Because of the small extent of the population and the encroachment of woody vegetation, the Arizona eryngo population is currently in moderate condition and is at risk of extirpation from decreased springflow due to continuing loss of groundwater from the aquifer.

#### Lewis Springs

The population of Arizona eryngo in Lewis Springs, estimated at 1,813 plants, occurs along a very narrow cienega parallel to a railroad, occupying about 0.04 hectares (0.1 acres) (Li 2020a, p. 1). In 2005, there were more than a dozen springs and seeps in the wetland complex; as of 2019, some of the wetland patches appear to be drying, with soil drier at several sites than it had been in 2005 (Simms 2019, entire). The water source of Lewis Springs Cienega is supplied by mountain front recharge (westward flow from the Mule Mountains and eastward flow from the Huachuca Mountains) (Baillie *et al.* 2007, p. 7; Stromberg *et al.* 2019, p. 6). Groundwater pumping up to several kilometers away may be affecting the regional groundwater flow to the wetlands along the San Pedro River, including Lewis Springs (Stromberg *et al.* 2019, p. 9).

Nonnative Johnsongrass is aggressively invading Lewis Springs and appears to be suppressing Arizona eryngo, particularly in the drier areas of the cienega (Simms 2019, p. 22; Li 2020a, p. 2). Similarly, baccharis has been invading and appears to be suppressing Arizona eryngo, as no Arizona eryngo plants were found growing in the understory of baccharis (Simms 2019, p. 6; Li 2019, p. 1). In the wetter areas of the cienega where the soil is saturated and surface water is generally present, common spikerush (*Eleocharis palustris*) and bulrush appear to suppress Arizona eryngo (Li 2020a, p. 2).

BLM has conducted some removal of Johnsongrass at Lewis Springs and is currently planning for additional removal of the species. BLM is also planning experimental removal of baccharis shrubs at Lewis Springs, and they are considering establishment of additional populations and/or subpopulations of Arizona eryngo at suitable sites within Lewis Springs and the SPRNCA. BLM is also collecting seeds for propagation and banking.

Because of the moderate population size, extremely small population extent, decreasing springflow and increased drying of soils, and plant species invasion, Lewis Springs is currently in moderate condition. The population is currently at risk of extirpation from drying due to drought, groundwater pumping, and invasion of nonnative Johnsongrass.

#### Rancho Agua Caliente, Mexico

The Arizona eryngo population at Rancho Agua Caliente occupies about 1 hectare (2.5 acres). The population is estimated to be several hundred plants, including juveniles (Sánchez Escalante *et al.* 2019, p. 16; Sánchez Escalante 2019, pers. comm.). This cienega is the only known population of Arizona eryngo in Sonora.

Rancho Agua Caliente is an active cattle ranch, and Arizona eryngo habitat is somewhat disturbed by cattle (Sánchez Escalante *et al.* 2019, p. 16), which may help

create open sun conditions for the species. We have no information on the groundwater source for the spring.

Because of the small numbers of individuals at Rancho Agua Caliente, the population is currently in low condition and is at risk of extirpation due to drought and drying of habitat.

Ojo Vareleño, Mexico

The Arizona eryngo population at Ojo Vareleño contains about 56 adult plants (Sánchez Escalante *et al.* 2019, p. 17) in a 0.075-hectare (0.18-acre) area (Sánchez Escalante 2019, pers. comm.). No juveniles have been documented at this site.

Giant reed has been aggressively invading Ojo Vareleño (Sánchez Escalante *et al.* 2019, p. 10), and it appears that the site has variable soil moisture and sunlight conditions. The giant reed invasion is creating conditions with high amounts of shade and little to no space for other plants. Springflow is collected in concrete spa ponds (Sánchez Escalante *et al.* 2019, p. 28), which likely affects the natural hydrology of the site. Currently, we do not have information on the source of water supplying the springs or the amount of groundwater use at this site.

Because of the very low population numbers and the lack of juveniles, the population of Arizona eryngo at Ojo Vareleño is currently in low condition. A small change in the water levels at the cienega or further invasion by giant reed could cause the extirpation of the population in the near future.

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. Our assessment of the current and future conditions encompasses and incorporates the threats individually and cumulatively. Our

current and future condition assessment is iterative because it accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.

### **Determination of Arizona Eryngo's Status**

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines endangered species as a species “in danger of extinction throughout all or a significant portion of its range,” and threatened species as a species “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether a species meets the definition of endangered species or threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

#### *Status Throughout All of Its Range*

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we found that the Arizona eryngo has declined in abundance and distribution. At present, most of the known populations exist in very low abundances, and all populations occur in extremely small areas. Furthermore, existing available habitats are reduced in quality and quantity, relative to historical conditions. Our analysis revealed three primary threats that caused these declines and pose a

meaningful risk to the viability of the species. These threats are primarily related to habitat changes (Factor A from the Act): physical alteration of cienegas, water loss, and changes in co-occurring vegetation, all of which are exacerbated by the effects of climate change.

Because of historical and current modifications of cienegas and groundwater withdrawals from the aquifers supporting occupied cienegas, Arizona eryngo populations are now fragmented and isolated from one another and unable to recolonize following extirpations. These populations are largely in a state of chronic degradation due to water loss and changes in co-occurring vegetation, affecting soil moisture and open canopy conditions and limiting the species' resiliency. Given the high risk of a catastrophic drought or groundwater depletion, both of which are exacerbated by climate change, all Arizona eryngo populations are at a high or moderate risk of extirpation. Historically, the species, with a larger range of likely interconnected populations, would have been more resilient to stochastic events because even if some populations were extirpated by such events, they could be recolonized over time by dispersal from nearby surviving populations. This connectivity, which would have made for a highly resilient species overall, has been lost, and with two populations in low condition and two in moderate condition, the remnant populations are all at risk of loss.

Our analysis of the Arizona eryngo's current conditions, using the best available information, shows that the Arizona eryngo is in danger of extinction throughout all of its range due to the severity and immediacy of threats currently impacting the species. We find that a threatened species status is not appropriate because of the Arizona eryngo's currently contracted range, because the populations are fragmented from one another, because the threats are currently ongoing and occurring across the entire range of the species.

*Status Throughout a Significant Portion of Its Range*



Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. We have determined that the Arizona eryngo is in danger of extinction throughout all of its range and accordingly did not undertake an analysis of any significant portion of its range. Because the Arizona eryngo warrants listing as endangered throughout all of its range, our determination is consistent with the decision in *Center for Biological Diversity v. Everson*, 2020 WL 437289 (D.D.C. Jan. 28, 2020), in which the court vacated the aspect of the Final Policy on Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act’s Definitions of “Endangered Species” and “Threatened Species” (79 FR 37578; July 1, 2014) that provided the Services do not undertake an analysis of significant portions of a species’ range if the species warrants listing as threatened throughout all of its range.

#### *Determination of Status*

Our review of the best available scientific and commercial information indicates that the Arizona eryngo meets the Act’s definition of an endangered species. Therefore, we propose to list the Arizona eryngo as an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act.

#### **Available Conservation Measures**

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened ("downlisting") or removal from protected status ("delisting"), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (<http://www.fws.gov/endangered>), or from our Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

If this species is listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Arizona would be eligible for Federal funds to implement management actions that promote the protection or recovery of the Arizona eryngo. Information on our grant programs that are available to aid species recovery can be found at: <http://www.fws.gov/grants>.

Although the Arizona eryngo is only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in

destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by the BLM or groundwater use by Fort Huachuca or other Federal agencies (or permitted or funded by a Federal agency) within the hydrological influence of Lewis Springs, La Cebadilla, or Agua Caliente.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered plants. The prohibitions of section 9(a)(2) of the Act, codified at 50 CFR 17.61, make it illegal for any person subject to the jurisdiction of the United States to: import or export; remove and reduce to possession from areas under Federal jurisdiction; maliciously damage or destroy on any such area; remove, cut, dig up, or damage or destroy on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law; deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity; or sell or offer for sale in interstate or foreign commerce an endangered plant. Certain exceptions apply to employees of the Service, the National Marine Fisheries Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered plants under certain circumstances. Regulations governing permits are

codified at 50 CFR 17.62. With regard to endangered plants, a permit may be issued for scientific purposes or for enhancing the propagation or survival of the species. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of the species proposed for listing. Based on the best available information, the following actions are unlikely to result in a violation of section 9, if these activities are carried out in accordance with existing regulations and permit requirements; this list is not comprehensive:

- (1) Normal agricultural and silvicultural practices, including herbicide and pesticide use, that are carried out in accordance with any existing regulations, permit and label requirements, and best management practices;
- (2) Normal residential landscaping activities on non-Federal lands; and
- (3) Recreational use with minimal ground disturbance.

Based on the best available information, the following activities may potentially result in a violation of section 9 of the Act if they are not authorized in accordance with applicable law; this list is not comprehensive:

- (1) Unauthorized handling, removing, trampling, or collecting of the Arizona eryngo on Federal land; and
- (2) Removing, cutting, digging up, or damaging or destroying the Arizona eryngo in knowing violation of any law or regulation of the State of Arizona or in the course of any violation of a State criminal trespass law.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

## **II. Critical Habitat**

### **Background**

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and

transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Designation also does not allow the government or public to access private lands, nor does designation require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement “reasonable and prudent alternatives” to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act’s definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features that occur in specific occupied areas, we focus on the specific features

that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. When designating critical habitat, the Secretary will first evaluate areas occupied by the species. The Secretary will only consider unoccupied areas to be essential where a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species. In addition, for an unoccupied area to be considered essential, the Secretary must determine that there is a reasonable certainty both that the area will contribute to the conservation of the species and that the area contains one or more of those physical or biological features essential to the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the



use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information from the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans,

habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

### **Prudency Determination**

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. Our regulations (50 CFR 424.12(a)(1)) state that the Secretary may, but is not required to, determine that a designation would not be prudent in the following circumstances:

(i) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act;

(iii) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States;

(iv) No areas meet the definition of critical habitat; or

(v) The Secretary otherwise determines that designation of critical habitat would not be prudent based on the best scientific data available.

As discussed earlier in this document, there is currently no imminent threat of collection or vandalism identified under Factor B for this species, and identification and mapping of critical habitat is not expected to initiate any such threat. In our SSA and proposed listing determination for the Arizona eryngo, we determined that the present or threatened destruction, modification, or curtailment of habitat or range is a threat to the

Arizona eryngo and that threat in some way can be addressed by section 7(a)(2) consultation measures. Over half of the historical range of the species occurs in the jurisdiction of the United States, and we are able to identify areas that meet the definition of critical habitat. Therefore, because none of the circumstances enumerated in our regulations at 50 CFR 424.12(a)(1) has been met and because there are no other circumstances the Secretary has identified for which this designation of critical habitat would be not prudent, we have determined that the designation of critical habitat is prudent for the Arizona eryngo.

### **Critical Habitat Determinability**

Having determined that designation is prudent, under section 4(a)(3) of the Act we must find whether critical habitat for the Arizona eryngo is determinable. Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist:

- (i) Data sufficient to perform required analyses are lacking, or
- (ii) The biological needs of the species are not sufficiently well known to identify any area that meets the definition of “critical habitat.”

When critical habitat is not determinable, the Act allows the Service an additional year to publish a critical habitat designation (16 U.S.C. 1533(b)(6)(C)(ii)).

We reviewed the available information pertaining to the biological needs of the species and habitat characteristics where this species is located. This and other information represent the best scientific data available and led us to conclude that the designation of critical habitat is determinable for the Arizona eryngo.

### **Physical or Biological Features Essential to the Conservation of the Species**

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the

physical or biological features that are essential to the conservation of the species and that may require special management considerations or protection. The regulations at 50 CFR 424.02 define “physical or biological features essential to the conservation of the species” as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkali soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species.

In considering whether features are essential to the conservation of the species, the Service may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for

breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

### *Physiological Requirements*

The Arizona eryngo needs permanently moist to saturated, alkaline, organic soils. The species is a cienega obligate and grows in wetland margins. At a minimum, soil should be moist year round immediately beneath the surface, even during drought years, as adequately moist soil is required for flowering, seed germination, and seedling survival and recruitment. Overly dry soils may allow other more drought-tolerant species to invade, or the Arizona eryngo plants may die. Conversely, if the soil is inundated with water for long periods, other invasive plant species may take over. Alkaline and organic soils are typical of cienegas.

Based on the above information, we determine that the Arizona eryngo needs permanently moist to saturated soils. Soils should be saturated with some standing water during winter and be at least moist just below the surface during summer.

Cienegas occupied by Arizona eryngo are associated with and fed by springs and are low-gradient wetlands that serve to slow water and trap organic materials and nutrients. Spring-dominated cienegas are maintained by fault lines crossing aquifers and/or the intersection of wetland sites with shallow aquifers overlaying a deeper, impervious layer, both of which allow for groundwater to be forced to the surface (Minckley *et al.* 2013a, p. 214; Johnson *et al.* 2016, pp. 80–81). Cienegas are often found in the upper reaches of small drainages or above river channels in a variety of surrounding vegetation communities, and thus are protected from scouring floods (Sivinski and Tonne 2011, p. 2). Cienegas have water tables at or near the ground surface (Norman *et al.* 2019, p. 4) and are therefore maintained by the discharge of groundwater from relatively shallow aquifers. A decline in groundwater inflow (recharge) or increase in groundwater outflow (discharge) (e.g., from groundwater

withdrawal, drought, increased evapotranspiration) can lead to reductions and disruptions in springflow, or elimination of springs and wetlands altogether (Johnson *et al.* 2016, p. 52). The hydrological processes that maintain functional cienega habitat support resilient Arizona eryngo populations.

Finally, the Arizona eryngo needs open sun conditions (Stromberg *et al.* 2019, p. 9). The species is more abundant in open areas than in areas shaded by riparian trees. Colony boundaries at most sites are defined by the presence of native and nonnative vegetation. Plants observed in November 2019 and January 2020 under tree canopy at La Cebadilla showed a reduction in flowering that year, and leaves appeared less upright (more prostrate) and etiolated (pale due to reduced exposure to sunlight) compared to nearby Arizona eryngo plants in sunnier conditions (Li 2020a, p. 11).

#### *Summary of Essential Physical or Biological Features*

We derive the specific physical or biological features essential to the conservation of the Arizona eryngo from studies of the species' habitat, ecology, and life history as described below. Additional information can be found in the SSA report (Service 2020, entire; available on <http://www.regulations.gov> under Docket No. FWS–R2–ES–2020–0130). We have determined that the following physical or biological features are essential to the conservation of Arizona eryngo:

(1) Cienegas within the Chihuahuan and Sonoran Deserts:

(a) That contain permanently moist to saturated, organic, alkaline soils with some standing water in winter and that are moist at or just below the surface in summer; and

(b) That have functional hydrological processes and are sustained by springflow via discharge of groundwater.

(2) Areas of open canopy throughout the cienega.

## **Special Management Considerations or Protection**

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection. The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: physical alteration of cienegas, water loss, and changes in co-occurring vegetation. Management activities that could ameliorate these threats include, but are not limited to: Use best management practices (BMPs) to minimize erosion and sedimentation; remove and control invasive, nonnative species (e.g., Johnsongrass) that encroach on critical habitat; selectively manage woody vegetation that encroaches on critical habitat; exclude livestock, or in some instances where such management would further the conservation of cienega habitat and the species, use highly managed grazing; avoid or minimize groundwater withdrawal to maintain adequate springflow to maintain cienegas; and avoid springflow diversion and springhead modification to maintain springflow to cienegas.

In summary, we find that the occupied areas we are proposing to designate as critical habitat contain the physical or biological features that are essential to the conservation of the Arizona eryngo and that may require special management considerations or protection. Special management considerations or protection may be required of the Federal action agency to eliminate, or to reduce to negligible levels, the threats affecting the essential physical or biological features of each unit.

## **Criteria Used To Identify Critical Habitat**

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat

requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat. We are not currently proposing to designate any areas outside the geographical area occupied by the species because we have not identified any unoccupied areas that meet the definition of critical habitat at this time. While the Arizona eryngo needs additional populations to reduce extinction risk, the only historical extirpated location with the essential physical or biological features is Agua Caliente, where the species has already been reintroduced; therefore, it is currently occupied. We are not aware of which additional locations may have a reasonable certainty of contributing to conservation.

In summary, for areas within the geographic area occupied by the species at the time of listing, we delineated critical habitat unit boundaries using the following criteria: Evaluate habitat suitability of cienegas within the geographic area occupied at the time of listing, and retain those cienegas that contain some or all of the physical or biological features that are essential to support life history processes of the species.

When determining proposed critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical or biological features necessary for the Arizona eryngo. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this proposed rule have been excluded by text in the proposed rule and are not proposed for designation as critical habitat. Therefore, if the critical habitat is finalized as proposed, a Federal action involving these lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the



specific action would affect the physical or biological features in the adjacent critical habitat.

We propose to designate as critical habitat lands that we have determined are occupied at the time of listing (i.e., currently occupied) and that contain one or more of the physical or biological features that are essential to support life-history processes of the species.

Units are proposed for designation based on one or more of the physical or biological features being present to support *Arizona eryngo*'s life-history processes. Some units contain all of the identified physical or biological features and support multiple life-history processes. Some units contain only some of the physical or biological features necessary to support the *Arizona eryngo*'s particular use of that habitat.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document under **Proposed Regulation Promulgation**. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public at <https://www.fws.gov/southwest/es/arizona/> and at <http://www.regulations.gov> under Docket No. FWS–R2–ES–2020–0130.

### **Proposed Critical Habitat Designation**

We are proposing three units as critical habitat for the *Arizona eryngo*, all of which are in Arizona. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the *Arizona eryngo*. The three areas we propose as critical habitat are: (1) Lewis Springs, (2) La Cebadilla, and (3) Agua Caliente. The table below shows the proposed critical habitat units and the approximate area of each unit. All units are occupied.

# **Table of proposed critical habitat units for the Arizona eryngo.**

[Area estimates reflect all land within critical habitat unit boundaries.]

Critical Habitat Unit	Subunit	Land Ownership by Type	Size of Unit in Acres (Hectares)	Occupied?
1. Lewis Springs		Federal (BLM)	9.6 (3.9)	Yes
2. La Cebadilla		Private, Pima County Regional Flood Control District	3.1 (1.3)	Yes
3. Agua Caliente	3a. Pond 1 Wetland	Pima County Natural Resources, Parks and Recreation	0.04 (0.02)	Yes
	3b. Pond 1 Wildlife Island		0.2 (0.07)	
	3c. Pond 2		0.09 (0.04)	
<b>Total</b>			13.0 (5.3)	

Note: Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for the Arizona eryngo, below.

## *Unit 1: Lewis Springs*

Unit 1 consists of 9.6 acres (3.9 hectares) encompassing the wetlands at Lewis Springs just to the east of the San Pedro River in Cochise County, within the San Pedro River Basin. The unit is located within the SPRNCA, which is owned and managed by the BLM to conserve, protect, and enhance a rare remnant of desert riparian ecosystem. The unit is occupied by the species and contains all the physical or biological features essential to the conservation of the Arizona eryngo. The Lewis Springs Unit is being affected by drought, nonnative species invasion, woody vegetation encroachment, and ongoing human demand for water resulting in declining groundwater levels. Therefore, special management is necessary to reduce invasion of nonnative species and encroachment of woody vegetation and to improve groundwater levels to support continued springflow.

## *Unit 2: La Cebadilla*

Unit 2 consists of 3.1 acres (1.3 hectares) of cienega habitat at La Cebadilla Cienega, adjacent to the Tanque Verde Wash east of Tucson in Pima County, within the Santa Cruz River Basin. The majority of the unit is located on lands owned by La Cebadilla Estates, with a smaller portion of the unit located on lands owned and managed by PCFCD. The homeowners association of La Cebadilla Estates manages their portion of the cienega as common property for the common use and enjoyment of its members. PCFCD manages their portion of the cienega as natural open space, which has a restrictive covenant that limits development and protects natural resources on the property. The La Cebadilla Unit is occupied by the species and contains all the physical or biological features essential to the conservation of the Arizona eryngo. The unit is located in a rural neighborhood and is being affected by drought, woody vegetation encroachment, and ongoing human demand for water resulting in declining groundwater levels. Therefore, special management is necessary to reduce encroachment of woody vegetation and to improve groundwater levels to support continued springflow.

### *Unit 3: Agua Caliente*

Unit 3 consists of three subunits totaling 0.3 acres (0.1 hectares), all within the Agua Caliente Regional Park. The park is located east of Tucson in Pima County within the Santa Cruz River Basin (Stromberg *et al.* 2019, p. 5) and is owned and managed by Pima County Natural Resources, Parks and Recreation. The Arizona eryngo historically occurred at this site, but the population was extirpated, likely due to multiple manipulations of the site, including spring modification (Stromberg *et al.*, p. 5; SWCA 2002, pp. 1–2) and pond impoundment. Reintroduction efforts for the species began in 2017, and while a self-sustaining population does not yet exist, multiple plants have been established at various sites within the unit. Therefore, the unit is occupied by the species and contains two (saturated soils and areas of open canopy) of the three physical or biological features essential to the conservation of the Arizona eryngo. The Agua

Caliente Unit is in a semi-rural setting and is being affected by drought, nonnative species invasion, woody vegetation encroachment, and ongoing human demand for water resulting in declining groundwater levels. Therefore, special management is necessary to reduce invasion of nonnative species and encroachment of woody vegetation and to improve groundwater levels to support continued springflow.

*Subunit 3a: Pond 1 Wetland*—Subunit 3a, Pond 1 Wetland consists of 0.04 acres (0.02 hectares) of shoreline habitat on the northwest shore of Pond 1. During restoration of Pond 1, a small wetland was created in this area, and Arizona eryngo were planted. The shoreline contains saturated soils, and portions of the shoreline contain open canopy. This subunit is currently occupied.

*Subunit 3b: Pond 1 Wildlife Island*—Subunit 3b, Pond 1 Wildlife Island consists of 0.2 acres (0.07 hectares) of a wildlife island within Pond 1. A channel is cut through the wildlife island, creating saturated soil conditions within the channel, where Arizona eryngo were planted. The entire wildlife island has open canopy conditions currently. This subunit is currently occupied.

*Subunit 3c: Pond 2*—Subunit 3c, Pond 2 consists of 0.09 acres (0.04 hectares) of shoreline habitat on the south shore of Pond 2. Arizona eryngo were planted just above the water line in an area of completely open canopy that contains saturated soils. This subunit is currently occupied.

## **Effects of Critical Habitat Designation**

### *Section 7 Consultation*

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service

on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

We published a final rule revising the definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation.

Compliance with the requirements of section 7(a)(2) is documented through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify

critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency’s legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Service Director’s opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 set forth requirements for Federal agencies to reinstitute formal consultation on previously reviewed actions. These requirements apply when the Federal agency has retained discretionary involvement or control over the action (or the agency’s discretionary involvement or control is authorized by law) and, subsequent to the previous consultation, we have listed a new species or designated critical habitat that may be affected by the Federal action, or the action has been modified in a manner that affects the species or critical habitat in a way not considered in the previous consultation. In such situations, Federal agencies sometimes may need to request reinitiation of consultation with us, but the regulations also specify some exceptions to the requirement to reinstitute consultation on specific land management

plans after subsequently listing a new species or designating new critical habitat. See the regulations for a description of those exceptions.

*Application of the “Destruction or Adverse Modification” Standard*

The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may violate section 7(a)(2) of the Act by destroying or adversely modifying such habitat, or that may be affected by such designation.

Activities that the Service may, during a consultation under section 7(a)(2) of the Act, find are likely to destroy or adversely modify critical habitat include, but are not limited to:

(1) Actions that would alter the hydrology of the cienega. Such activities could include, but are not limited to, springflow diversion, springhead modification, groundwater withdrawal, and physical alteration of the cienega. These activities could change the hydrological processes of the cienega, reducing or eliminating habitat for the Arizona eryngo.

(2) Actions that promote the growth of nonnative plant species and canopy cover. Such actions include, but are not limited to, planting of nonnative plant species and woody vegetation, and seed spread through livestock and tire treads. These activities could reduce or eliminate habitat for the Arizona eryngo.

(3) Actions that result in further fragmentation of Arizona eryngo habitat. Such actions include, but are not limited to, fuel breaks, roads, and trails. These activities could reduce or eliminate habitat for the Arizona eryngo.

## **Exemptions**

### *Application of Section 4(a)(3) of the Act*

Section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan (INRMP) prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. There are no Department of Defense (DoD) lands with a completed INRMP within the proposed critical habitat designation.

### **Consideration of Exclusions under Section 4(b)(2) of the Act**

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making the determination to exclude a particular area, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.



We describe below the process that we undertook for taking into consideration each category of impacts and our analyses of the relevant impacts.

#### *Consideration of Economic Impacts*

Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. To assess the probable economic impacts of a designation, we must first evaluate specific land uses or activities and projects that may occur in the area of the critical habitat. We then must evaluate the impacts that a specific critical habitat designation may have on restricting or modifying specific land uses or activities for the benefit of the species and its habitat within the areas proposed. We then identify which conservation efforts may be the result of the species being listed under the Act versus those attributed solely to the designation of critical habitat for this particular species. The probable economic impact of a proposed critical habitat designation is analyzed by comparing scenarios both “with critical habitat” and “without critical habitat.”

The “without critical habitat” scenario represents the baseline for the analysis, which includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat (e.g., under the Federal listing as well as other Federal, State, and local regulations). The baseline, therefore, represents the costs of all efforts attributable to the listing of the species under the Act (i.e., conservation of the species and its habitat incurred regardless of whether critical habitat is designated). The “with critical habitat” scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts would not be expected without the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat, above and beyond the baseline costs. These are the costs we use when

evaluating the benefits of inclusion and exclusion of particular areas from the final designation of critical habitat should we choose to conduct a discretionary 4(b)(2) exclusion analysis.

For this particular designation, we developed an incremental effects memorandum (IEM) considering the probable incremental economic impacts that may result from this proposed designation of critical habitat. The information contained in our IEM was then used to develop a screening analysis of the probable effects of the designation of critical habitat for the Arizona eryngo (IEc 2020, entire). We began by conducting a screening analysis of the proposed designation of critical habitat in order to focus our analysis on the key factors that are likely to result in incremental economic impacts. The purpose of the screening analysis is to filter out particular geographic areas of critical habitat that are already subject to such protections and are, therefore, unlikely to incur incremental economic impacts. In particular, the screening analysis considers baseline costs (i.e., absent critical habitat designation) and includes probable economic impacts where land and water use may be subject to conservation plans, land management plans, best management practices, or regulations that protect the habitat area as a result of the Federal listing status of the species. Ultimately, the screening analysis allows us to focus our analysis on evaluating the specific areas or sectors that may incur probable incremental economic impacts as a result of the designation. If there are any unoccupied units in the proposed critical habitat designation, the screening analysis assesses whether any additional management or conservation efforts may incur incremental economic impacts. This screening analysis combined with the information contained in our IEM are what we consider our draft economic analysis (DEA) of the proposed critical habitat designation for the Arizona eryngo; our DEA is summarized in the narrative below.

Executive Orders (E.O.s) 12866 and 13563 direct Federal agencies to assess the costs and benefits of available regulatory alternatives in quantitative (to the extent

feasible) and qualitative terms. Consistent with the E.O. regulatory analysis requirements, our effects analysis under the Act may take into consideration impacts to both directly and indirectly affected entities, where practicable and reasonable. If sufficient data are available, we assess to the extent practicable the probable impacts to both directly and indirectly affected entities. As part of our screening analysis, we considered the types of economic activities that are likely to occur within the areas likely affected by the critical habitat designation. In our evaluation of the probable incremental economic impacts that may result from the proposed designation of critical habitat for the Arizona eryngo, first we identified, in the IEM dated October 15, 2020, probable incremental economic impacts associated with the following categories of activities: (1) Federal lands management (Bureau of Land Management); (2) vegetation management; (3) fire and fuels management; and (4) livestock grazing. We considered each industry or category individually. Additionally, we considered whether their activities have any Federal involvement. Critical habitat designation generally will not affect activities that do not have any Federal involvement; under the Act, designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. If we list the species, in areas where the Arizona eryngo is present, Federal agencies would be required to consult with the Service under section 7 of the Act on activities they fund, permit, or implement that may affect the species. If, when we list the species, we also finalize this proposed critical habitat designation, consultations to avoid the destruction or adverse modification of critical habitat would be incorporated into the existing consultation process.

In our IEM, we attempted to clarify the distinction between the effects that would result from the species being listed and those attributable to the critical habitat designation (i.e., difference between the jeopardy and adverse modification standards) for the Arizona eryngo's critical habitat. Because the designation of critical habitat for

Arizona eryngo is being proposed concurrently with the listing, it has been our experience that it is more difficult to discern which conservation efforts are attributable to the species being listed and those which will result solely from the designation of critical habitat. However, the following specific circumstances in this case help to inform our evaluation: (1) The essential physical or biological features identified for critical habitat are the same features essential for the life requisites of the species, and (2) any actions that would result in sufficient harm to constitute jeopardy to the Arizona eryngo would also likely adversely affect the essential physical or biological features of critical habitat. The IEM outlines our rationale concerning this limited distinction between baseline conservation efforts and incremental impacts of the designation of critical habitat for this species. This evaluation of the incremental effects has been used as the basis to evaluate the probable incremental economic impacts of this proposed designation of critical habitat.

The proposed critical habitat designation for the Arizona eryngo totals 13.0 acres (5.3 hectares) in three units, all of which are occupied. In occupied areas, any actions that may affect the species or its habitat would also affect critical habitat, and it is unlikely that any additional conservation efforts would be recommended to address the adverse modification standard over and above those recommended as necessary to avoid jeopardizing the continued existence of the Arizona eryngo. Therefore, only administrative costs are expected in the proposed critical habitat designation. While this additional analysis will require time and resources by both the Federal action agency and the Service, it is believed that, in most circumstances, these costs would predominantly be administrative in nature and would not be significant.

The probable incremental economic impacts of the Arizona eryngo critical habitat designation are expected to be limited to additional administrative effort as well as minor costs of conservation efforts resulting from a small number of future section 7

consultations. Because all of the proposed critical habitat units are occupied by the species, incremental economic impacts of critical habitat designation, other than administrative costs, are unlikely. At approximately \$5,300 or less per consultation, in order to reach the threshold of \$100 million of incremental administrative impacts in a single year, critical habitat designation would have to result in more than 18,800 consultations in a single year; instead, this designation is expected to result in 12 to 17 consultations in 10 years. Thus, the annual administrative burden is unlikely to reach \$100 million.

We are soliciting data and comments from the public on the DEA discussed above, as well as all aspects of this proposed rule and our required determinations. During the development of a final designation, we will consider the information presented in the DEA and any additional information on economic impacts we receive during the public comment period to determine whether any specific areas should be excluded from the final critical habitat designation under authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19. In particular, we may exclude an area from critical habitat if we determine that the benefits of excluding the area outweigh the benefits of including the area, provided the exclusion will not result in the extinction of this species.

#### *Consideration of National Security Impacts*

Section 4(a)(3)(B)(i) of the Act may not cover all DoD lands or areas that pose potential national-security concerns (e.g., a DoD installation that is in the process of revising its INRMP for a newly listed species or a species previously not covered). If a particular area is not covered under section 4(a)(3)(B)(i), national-security or homeland-security concerns are not a factor in the process of determining what areas meet the definition of “critical habitat.” Nevertheless, when designating critical habitat under section 4(b)(2), the Service must consider impacts on national security, including

homeland security, on lands or areas not covered by section 4(a)(3)(B)(i). Accordingly, we will always consider for exclusion from the designation areas for which DoD, Department of Homeland Security (DHS), or another Federal agency has requested exclusion based on an assertion of national-security or homeland-security concerns. We cannot, however, automatically exclude requested areas. When DoD, DHS, or another Federal agency requests exclusion from critical habitat on the basis of national-security or homeland-security impacts, it must provide a reasonably specific justification of an incremental impact on national security that would result from the designation of that specific area as critical habitat. That justification could include demonstration of probable impacts, such as impacts to ongoing border-security patrols and surveillance activities, or a delay in training or facility construction, as a result of compliance with section 7(a)(2) of the Act. If the agency requesting the exclusion does not provide us with a reasonably specific justification, we will contact the agency to recommend that it provide a specific justification or clarification of its concerns relative to the probable incremental impact that could result from the designation. If the agency provides a reasonably specific justification, we will defer to the expert judgment of DoD, DHS, or another Federal agency as to: (1) Whether activities on its lands or waters, or its activities on other lands or waters, have national-security or homeland-security implications; (2) the importance of those implications; and (3) the degree to which the cited implications would be adversely affected in the absence of an exclusion. In that circumstance, in conducting a discretionary section 4(b)(2) exclusion analysis, we will give great weight to national-security and homeland-security concerns in analyzing the benefits of exclusion.

In preparing this proposal, we have determined that the lands within the proposed designation of critical habitat for the Arizona eryngo are not owned, managed, or used by the DoD or DHS. We anticipate no impact on national security or homeland security.

However, during the development of a final designation we will consider any additional information we receive through the public comment period on the impacts of the proposed designation on national security or homeland security to determine whether any specific areas should be excluded from the final critical habitat designation under authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19.

#### *Consideration of Other Relevant Impacts*

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security discussed above. We consider a number of factors including whether there are permitted conservation plans covering the species in the area such as HCPs, safe harbor agreements (SHAs), or candidate conservation agreements with assurances (CCAAs), or whether there are non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at the existence of Tribal conservation plans and partnerships and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation.

In preparing this proposal, we have determined that there are currently no HCPs or other management plans for the Arizona eryngo, and the proposed designation does not include any Tribal lands or trust resources. We anticipate no impact on Tribal lands, partnerships, or HCPs from this proposed critical habitat designation. Additionally, as described above, we are not considering excluding any particular areas from critical habitat on the basis of impacts to national security or economic impacts. However, during the development of a final designation, we will consider any additional information we receive through the public comment period regarding other relevant impacts of the proposed designation and will determine whether any specific areas should be excluded from the final critical habitat designation under authority of section 4(b)(2) and our

implementing regulations at 50 CFR 424.19.

## **Required Determinations**

### *Clarity of the Rule*

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (1) Be logically organized;
- (2) Use the active voice to address readers directly;
- (3) Use clear language rather than jargon;
- (4) Be divided into short sections and sentences; and
- (5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

### *Regulatory Planning and Review (Executive Orders 12866 and 13563)*

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory



objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this proposed rule in a manner consistent with these requirements.

*Regulatory Flexibility Act (5 U.S.C. 601 et seq.)*

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C. 801 *et seq.*), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (*i.e.*, small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than \$5 million in annual sales, general and heavy construction businesses with less than \$27.5 million in annual business, special trade contractors doing less than \$11.5 million in annual business, and agricultural businesses with annual sales less than \$750,000. To determine whether potential economic impacts to these small entities are significant, we

considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term “significant economic impact” is meant to apply to a typical small business firm’s business operations.

Under the RFA, as amended, and as understood in light of recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does not require agencies to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our position that only Federal action agencies would be directly regulated if we adopt the proposed critical habitat designation. There is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated. Moreover, Federal agencies are not small entities. Therefore, because no small entities would be directly regulated by this rulemaking, the Service certifies that, if made final as proposed, the proposed critical habitat designation will not have a significant economic impact on a substantial number of small entities.

In summary, we have considered whether the proposed designation would result in a significant economic impact on a substantial number of small entities. For the above reasons and based on currently available information, we certify that, if made final, the proposed critical habitat designation will not have a significant economic impact on a

substantial number of small business entities. Therefore, an initial regulatory flexibility analysis is not required.

*Energy Supply, Distribution, or Use—Executive Order 13211*

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. In our economic analysis, we did not find that this proposed critical habitat designation would significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

*Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)*

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following finding:

(1) This proposed rule would not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or tribal governments, or the private sector, and includes both “Federal intergovernmental mandates” and “Federal private sector mandates.” These terms are defined in 2 U.S.C. 658(5)–(7). “Federal intergovernmental mandate” includes a regulation that “would impose an enforceable duty upon State, local, or tribal governments” with two exceptions. It excludes “a condition of Federal assistance.” It also excludes “a duty arising from participation in a voluntary Federal program,” unless the regulation “relates to a then-existing Federal program under which \$500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,” if the provision would “increase the stringency of conditions of assistance” or “place caps upon, or otherwise decrease, the Federal Government’s responsibility to provide funding,” and the State, local, or tribal governments “lack authority” to adjust accordingly. At the time of enactment, these entitlement programs

were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. “Federal private sector mandate” includes a regulation that “would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.”

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule would significantly or uniquely affect small governments because the lands proposed for critical habitat designation that are owned by Pima County are already set aside for conservation purposes, and small governments would be affected only to the extent that any programs having Federal funds, permits, or other authorized activities must ensure that their actions would not adversely affect the critical habitat. Therefore, a Small Government Agency Plan is not required.

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the Arizona eryngo in a takings implications assessment. The Act does not authorize the Service to regulate private actions on private lands or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect land ownership, or establish any closures, or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed for the proposed designation of critical habitat for the Arizona eryngo, and it concludes that, if adopted, this designation of critical habitat does not pose significant takings implications for lands within or affected by the designation.

*Federalism—Executive Order 13132*

In accordance with E.O. 13132 (Federalism), this proposed rule does not have significant Federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of this proposed critical habitat designation with, appropriate State resource agencies. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the proposed rule does not have substantial direct effects either on the States, or on the relationship between the

national government and the States, or on the distribution of powers and responsibilities among the various levels of government. The proposed designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat necessary for the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist State and local governments in long-range planning because they no longer have to wait for case-by-case section 7 consultations to occur.

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) of the Act would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

*Civil Justice Reform—Executive Order 12988*

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule would not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this proposed rule identifies the elements of physical or biological features essential to the conservation of the species. The proposed areas of designated critical habitat are presented on maps, and the proposed rule provides several options for the interested public to obtain more detailed location information, if desired.

*Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)*

This rule does not contain information collection requirements, and a submission to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

*National Environmental Policy Act (42 U.S.C. 4321 et seq.)*

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)). All of the proposed critical habitat lies outside of the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit. As a result, we are not preparing an environmental analysis.

*Government-to-Government Relationship with Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to

Indian culture, and to make information available to Tribes. We have determined that no Tribal lands fall within the boundaries of the proposed critical habitat for the Arizona eryngo, so no Tribal lands would be affected by the proposed designation.

### **References Cited**

A complete list of references cited in this rulemaking is available on the Internet at <http://www.regulations.gov> and upon request from the Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

### **Authors**

The primary authors of this proposed rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Arizona Ecological Services Field Office.

### **List of Subjects in 50 CFR Part 17**

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

### **Proposed Regulation Promulgation**

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

#### **PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS**

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361-1407; 1531-1544; and 4201-4245, unless otherwise noted.

2. Amend § 17.12(h), the List of Endangered and Threatened Plants, by adding an entry for "*Eryngium sparganophyllum*" in alphabetical order under FLOWERING PLANTS to read as follows:



**§ 17.12 Endangered and threatened plants.**

\* \* \* \* \*

(h) \* \* \*

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules
FLOWERING PLANTS				
* * * * *				
<i>Eryngium sparganophyllum</i>	Arizona eryngo	Wherever found	E	[ <i>Federal Register</i> citation when published as a final rule]; 50 CFR 17.96(a). <sup>CH</sup>
* * * * *				

3. Amend § 17.96(a) by adding an entry for “*Eryngium sparganophyllum* (Arizona eryngo)” in alphabetical order under Family Apiaceae to read as follows:

**§ 17.96 Critical habitat—plants.**

(a) *Flowering plants.*

\* \* \* \* \*

Family Apiaceae: *Eryngium sparganophyllum* (Arizona eryngo)

(1) Critical habitat units are depicted for Pima and Cochise Counties, Arizona, on the maps in this entry.

(2) Within these areas, the physical or biological features essential to the conservation of the Arizona eryngo consist of the following components:

(i) Cienegas within the Chihuahuan and Sonoran Deserts:

(A) That contain permanently moist to saturated, organic, alkaline soils with some standing water in winter and that are moist at or just below the surface in summer; and

(B) That have functional hydrological processes and are sustained by springflow via discharge of groundwater.

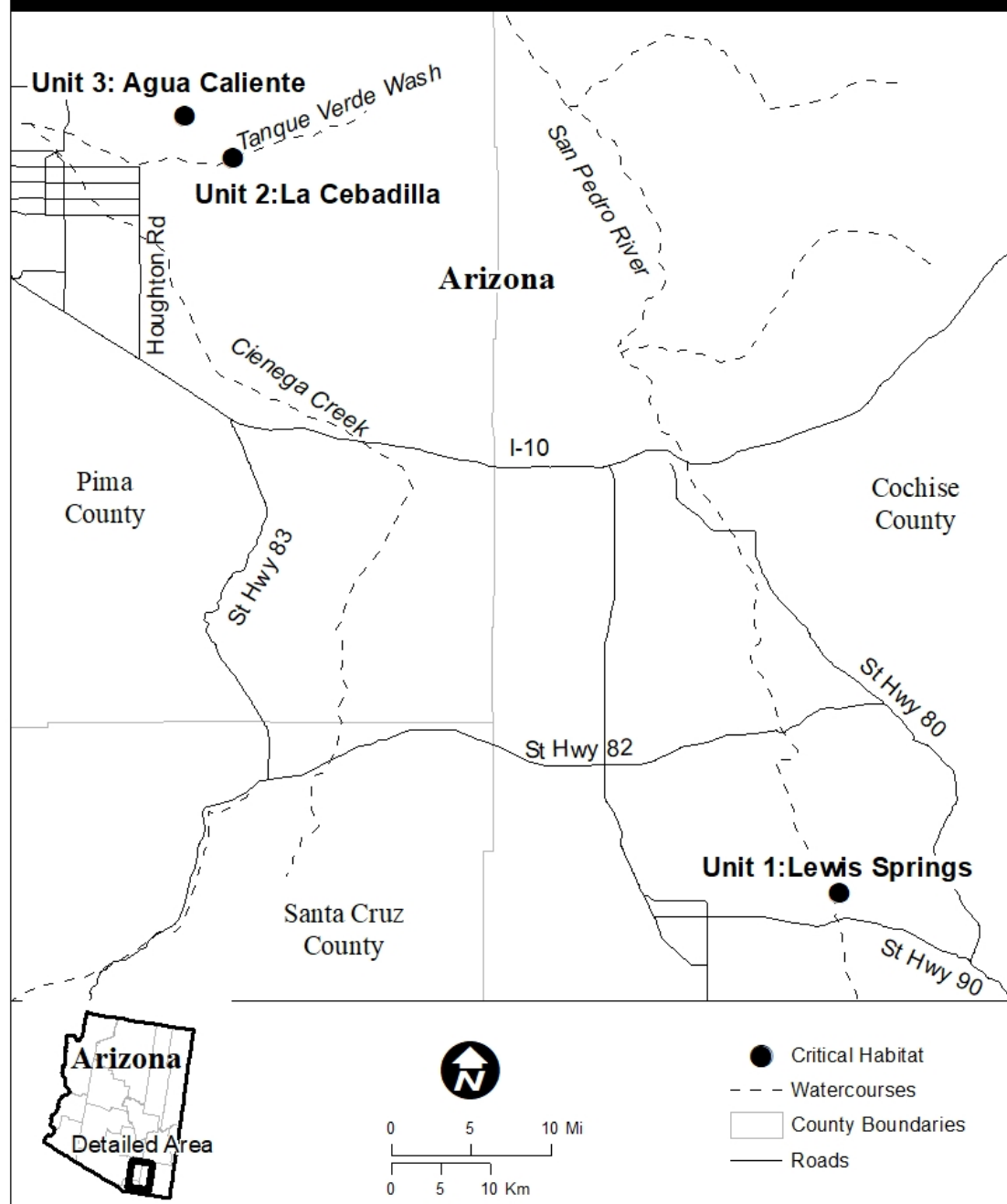
(ii) Areas of open canopy throughout the cienega.

(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of the final rule.

(4) *Critical habitat map units.* Data layers defining map units were created on a base of U.S. Geological Survey digital ortho-photo quarter-quadrangles, and critical habitat units were then mapped using Universal Transverse Mercator (UTM) Zone 15N coordinates. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the Service's Internet site at <https://www.fws.gov/southwest/es/arizona/>, at <http://www.regulations.gov> at Docket No. FWS-R2-ES-2020-0130, and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) *Note:* Index map follows:

# Critical Habitat for Arizona Eryngo Overview



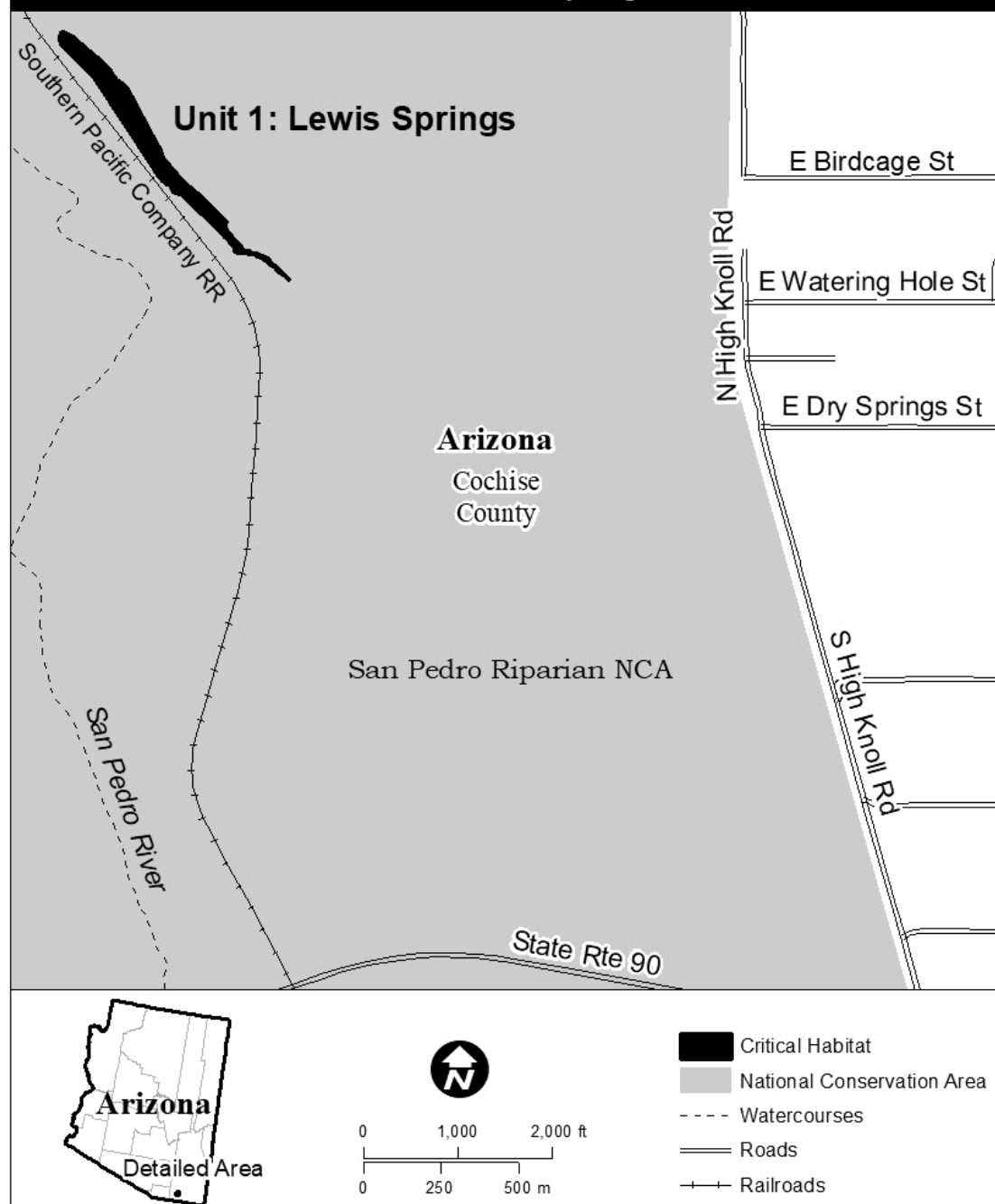
(6) Unit 1: Lewis Springs, Cochise County, Arizona.

(i) *General description:* Unit 1 consists of 9.6 acres (3.9 hectares) encompassing the wetlands at Lewis Springs just to the east of the San Pedro River in Cochise County, within the San Pedro River Basin. The unit is located within the San Pedro Riparian National Conservation Area, which is owned and managed by the Bureau of Land Management.

(ii) Map of Unit 1 follows:

# Critical Habitat for Arizona Eryngo

## Unit 1: Lewis Springs



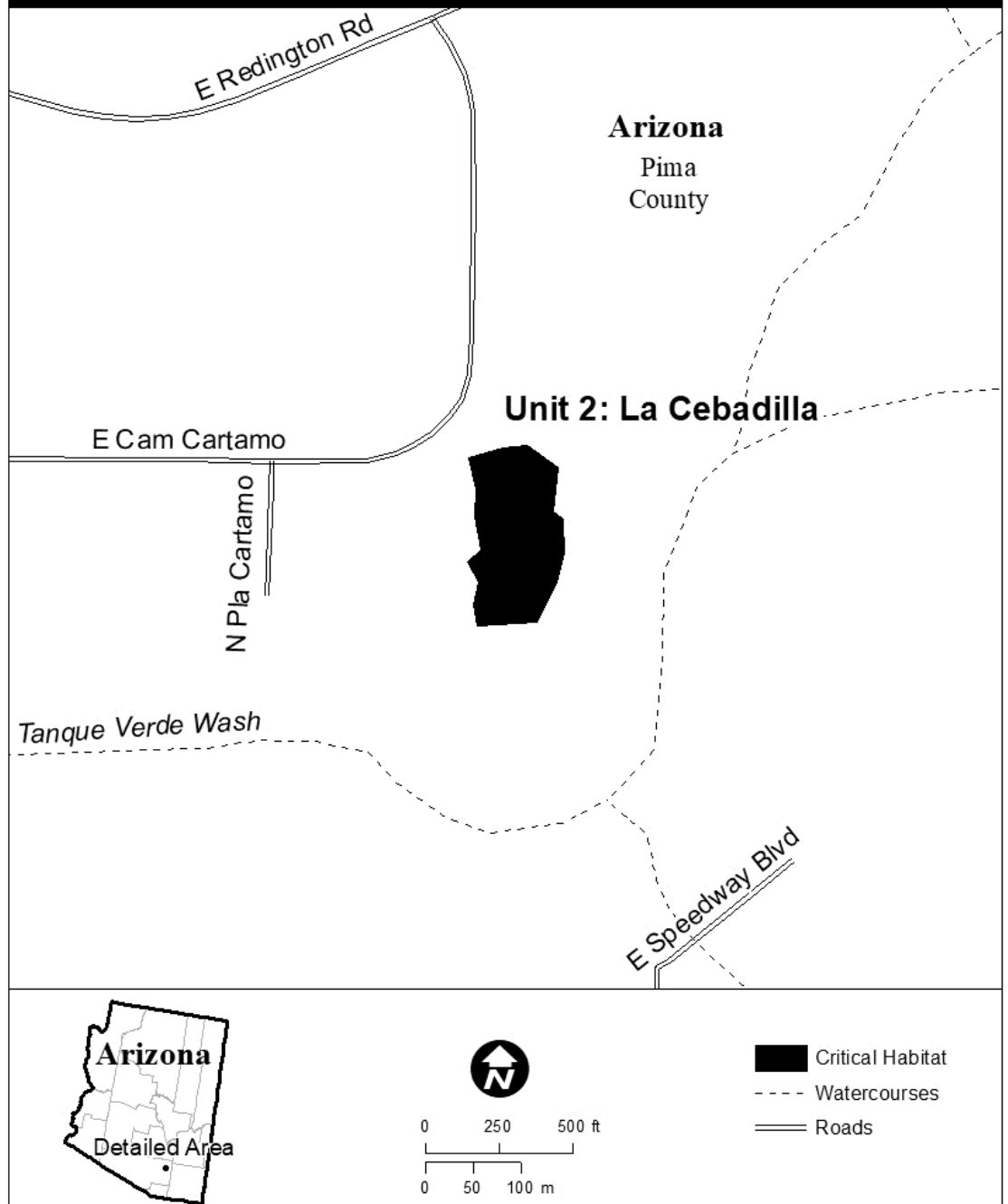
(7) Unit 2: La Cebadilla, Pima County, Arizona.

(i) *General description:* Unit 2 consists of 3.1 acres (1.3 hectares) of cienega habitat at La Cebadilla Cienega, adjacent to the Tanque Verde Wash east of Tucson within the Santa Cruz River Basin. The majority of the unit is located on lands owned by La Cebadilla Estates, with a smaller portion of the unit located on lands owned and managed by the Pima County Regional Flood Control District.

(ii) Map of Unit 2 follows:

# Critical Habitat for Arizona Eryngo

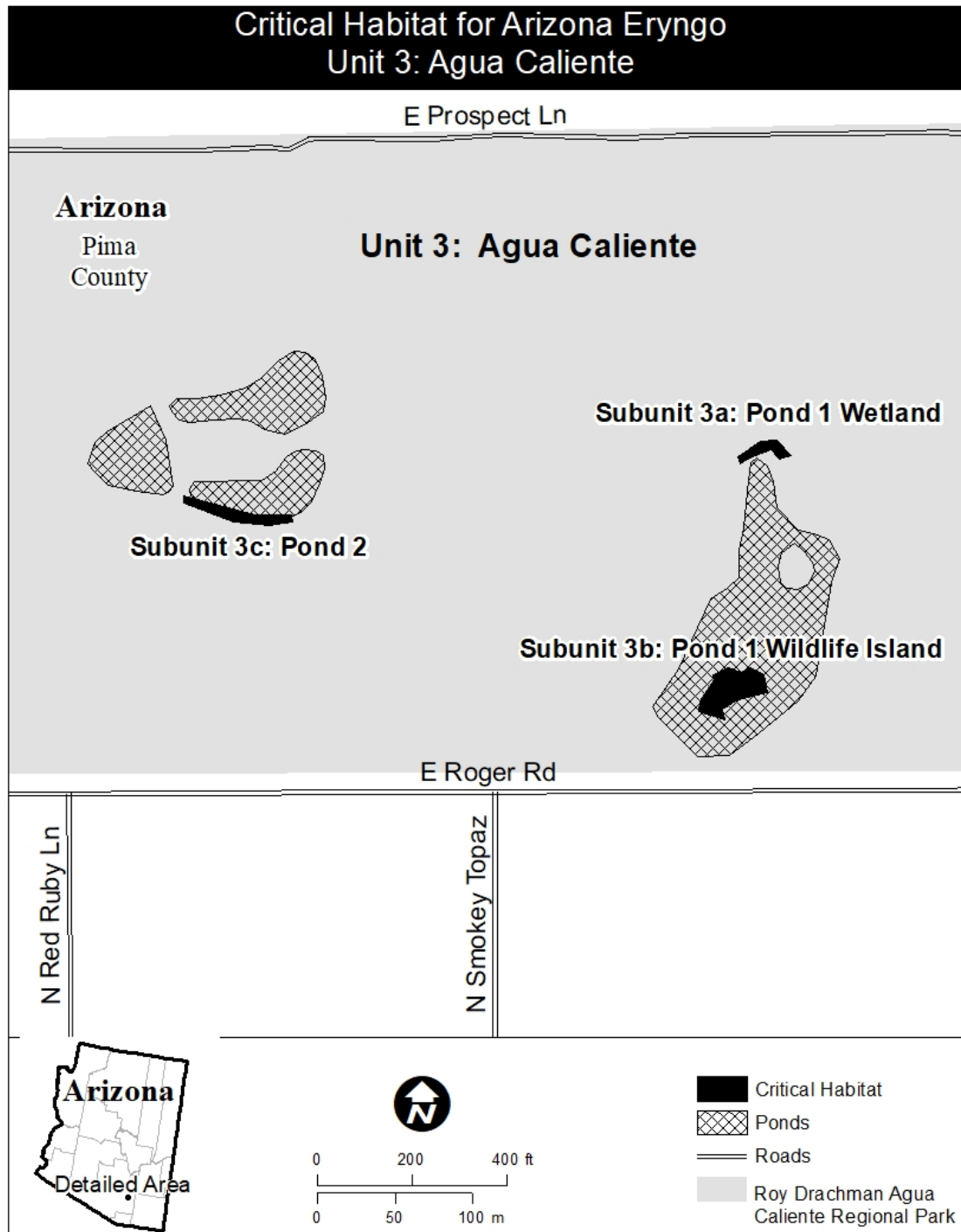
## Unit 2: La Cebadilla



(8) Unit 3: Agua Caliente, Pima County, Arizona.

(i) *General description:* Unit 3 consists of three subunits totaling 0.3 acres (0.1 hectares) east of Tucson within the Santa Cruz River Basin and is owned and managed by Pima County Natural Resources, Parks and Recreation.

(ii) Map of Unit 3 follows:





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**Martha Williams**

*Senior Advisor to the Secretary*

*Exercising the Delegated Authority of the Director*

*U.S. Fish and Wildlife Service*

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